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LIFE INSURANCE EXAMINATIONS

A Manual for the Medical Examiner and for All Interested in Life Insurance

BY

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PREFACE

THIS book embodies the material of the lectures which I have delivered during the past three years at the University and Bellevue Hospital Medical College, somewhat amplified. There seems to be a need for a concise manual, setting forth the duties and obligations of a medical examiner for life insurance. The usual books of instructions issued by the different companies are very incomplete in many points, and generally contain only the special rules of each company. They leave untouched a very large area of detail and suggestion, and this manual is designed to cover that field.

The subject of physical diagnosis is omitted, for the medical examiner is already supposed to be trained in that line. Furthermore, book-instruction in physical diagnosis is of doubtful value. This does not apply to chemical analysis of the urine and I have put in an appendix a description of the simple tests necessary for life-insurance work. At the earnest request of

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a friend, a medical director in a large company, I have also put a summary of the differential diagnosis of heart-murmurs in an appendix.

To those who read this book and see in it much that they knew before, I can only say with Kipling:

> "When 'Omer smote 'is bloomin' lyre
> He 'd 'eard men sing by land an' sea,
> An' what 'e thought 'e might require
> 'E went and took—the same as me."

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LIFE INSURANCE EXAMINATIONS

LIFE INSURANCE EXAMINATIONS

SECTION I

INTRODUCTORY

THERE are approximately about two hundred thousand appointments as medical examiners for life insurance in the United States and Canada. Many men, however, hold two or more appointments, so that the real number of examiners is probably about fifty thousand. The regular life-insurance companies divide about $5,000,000 annually among these men. This undoubtedly constitutes a very welcome addition to their united income, and it becomes still more important when we consider the growing dispensary abuse. Moreover, the appointment as examiner for a life-insurance company is an honorable position and confers distinction on the holder. It should improve his professional standing, enlarge his acquaintance, and increase his practice. Furthermore, it brings him into contact with healthy conditions and this occasional change must be pleasant to the physician, however much he is interested in his profession. Whatever the cause may be, these positions are held in much esteem by medical men. The most important reason doubtless is the pecuniary reward offered by the companies. This is much larger than the average fee obtained by most physicians whether in the city or the country. The time spent on each examination is not greater than that consumed by a new patient, the mental labor is certainly no heavier. When a physician goes to a new case, he has to obtain the history of the disease itself, of the previous condition of the patient, of the present symptoms; he has to make a thorough physical examination including the temperature; he has to lay down a certain dietary; to write out certain prescriptions and to give certain instructions. If a physician attends to his business properly, he will certainly take as much time in this as he will in making an examination for life insurance. Furthermore, he is paid one hundred per cent. for his life-insurance work; if in ordinary practice he collects sixty per cent. of the fees which he charges on his books he is doing well.

It may be asked whether the course of instruction at a first-class medical school does not convey all the information needed to make one a good examiner. Nowadays the medical student is well taught. He learns physical diagnosis from the living subject. He is competent to make a thorough uranalysis. He has considerable knowledge of the symptomatology and prognosis of many diseases, learnt from the bedside as well as from lectures and books. Are not these qualifications enough to enable him to examine healthy people and pass upon their merits? The answer must be emphatically no, unless he has received special instruction during his course. There are several reasons why he is yet unfit for this work. One is that he is now dealing with average health, for that is all a life-insurance company requires. It does not demand or expect paragons of health, who are anatomically and physically perfect. The alert young graduate fresh from his school or hospital hunts over an applicant until at last he finds a pinhole. Now that pinhole is really of no consequence, but it gradually grows larger in his eyes until it becomes a vital defect and he rejects the unfortunate applicant, or else he approves him with a qualified recommendation, and writes a many-paged letter to the home office, which completes the ruin of the case. Not only is such excess of zeal harmful to the company, but it also injures the examiner in his professional standing and success. The man whom he has thus refused to pass makes the matter personal and both he and the agent become his enemies. Some other examiner, of no greater skill, but of larger experience, passes judgment on the case and accepts him for another company. Then the clamor of the rejected applicant and the disappointed agent is redoubled, and the first examiner suffers in the estimation of his towns-folk and perhaps in his own self-confidence.

On the other hand, the young practitioner is accustomed to deal with sick people or those *who think* themselves sick, and who tell him every symptom and frequently a great deal more. He learns to sift the wheat from the chaff, and thus gets into the habit of attaching less value to the statements of the sick. Now, if he maintains this attitude in his relations with an applicant for life insurance, he is apt to get both himself and his company into trouble. The patient is prone to exaggerate his symptoms and disease. The applicant almost invariably minimizes them, feeling little or no sense of commercial honor when dealing with an impersonal thing like a corporation. If the examiner omits to record the trifling hemoptysis which the applicant says he had three years before, he may easily force a case of latent tuberculosis on the company. We know by painful experience how the laity ignore the significance of hemoptysis, if pulmonary trouble does not follow immediately, and in this course they are often helped by the attending physician. Naturally they are alarmed at first, but as time goes by without manifest damage to the health, their fears are allayed and they assume that it came from the nose or the tonsils, or any place but the lungs. Furthermore, we know the difficulty of diagnosing latent tuberculosis by means of the physical signs alone, if it has been checked in the early stage. But it often takes little to stir up this latent trouble into activity with the usual results.

Consider syphilis as another example. Any man is ashamed to confess that he has had it and puts it as remote in his life as he can. We frequently meet cases where a simple venereal ulcer gradually develops, under skilful cross-questioning, into typical syphilis with the usual symptoms and course. Such curious self-deception is an interesting psychological study. It should not be grouped in the same category with downright lying and perjury. It rather comes somewhere in the scale between these, and those white lies which are said to be the cement of society. This suppression of the truth is a common fault, and is well known to an examiner of experience. He learns to watch for it, to recognize it, and to obtain in spite of it some idea of the real facts. But he has reached this knowledge only by hard experience and in his earlier work of examining doubtless made costly mistakes. For it is *not reasonable* to suppose that a man can have such knowledge intuitively. He can only learn it by the experience of himself or of others.

The relations between the agent and the examiner are antagonistic and at the same time identical. They are antagonistic because any agent, no matter how honest he is, thinks naturally that all his cases should be passed at once, while the examiner is occasionally obliged to tell him that some of them are geese and not swans. No man enjoys being told this and yet the agent feels at times as if the examiner went out of his way in order to be irritating in the telling. The doctor forgets that the agent has worked hard, perhaps months, on a case and will have to work still longer and harder before he can deliver the policy. Policies do not grow on every bush, but have to be sought for and tended with care in order to make sure of the ripe fruit. In this pursuit an examiner can be of assistance without in any way lowering his dignity and incidentally he can benefit himself without harming the company. Until an examiner learns the golden mean between antagonism and sympathy in his relations with the agents, he is very apt to adopt one or the other extreme to the harm of proper insurance. On the one hand he regards with suspicion every agent and apparently begrudges him the time and energy needed to make an examination. On the other hand his sense of duty may become more and more blurred, for the company is remote and impersonal, and the agent is the only personal and influencing representative with whom he comes in contact. His sympathies may, therefore, lean more and more towards the agent, until at length he loses sight of his obligation to the company, and becomes in the hands of an unscrupulous agent a serious menace. Most examiners learn to reconcile these conflicting interests, but only after considerable experience. How much better and quicker they get that knowledge if they obtain it first from the experience of others.

The frauds and fraudulent practices in life insurance constitute another point of great importance. The best examiner may be deceived sometimes, but fortunately criminals are usually only cunning and not intelligent. An examiner who knows when to suspect fraud and how to prevent it, has but little difficulty. But if he meets it in his early days, it may put an indelible stain on his shield.

In this book we will discuss the following topics:

1. A brief outline of the history and fundamentals of life insurance.
2. The relations of the examiner to the company and the applicant.
3. The facts concerning each disease which are of importance from a life-insurance point of view.
4. The family record and heredity.
5. Habits, residence, and occupation.
6. The physical examination, particularly with regard to the distinction between essentials and non-essentials.
7. The relations of the examiner to the agent.
8. Frauds and fraudulent practices.

SECTION II

HISTORICAL

THE Anglo-Saxon race can claim the credit both of originating life insurance and of carrying it to its present magnificent proportions. Mutual insurance associations were known in Great Britain soon after the Conquest. According to Francis, "The necessity of providing for casualties by mutual assistance—in other words, insurance on its broadest and most rational basis—was practised in the Saxon guild, the origin of which was very simple. Every freeman of fourteen being bound to find sureties to keep the peace, certain neighbors, composed of ten families, became bound for one another, either to produce any one of the number who should offend against the Norman law, or to make pecuniary satisfaction for the offence. To do this they raised a fund by mutual payments, which they placed in one *common* stock. This was pure mutual assurance." He gives extracts from the by-laws of these ancient friendly societies. Thus:

"4. If any one takes away the life of a member, his reparatory fine shall not exceed eight pounds; but if he obstinately refuses to make reparation, then shall he be prosecuted by and at the expense of the whole society: and if any individual undertake the prosecution, then each of the rest shall bear an equal share of the expense. If, however, a member who is poor kill any one, and compensation must be made, then if the deceased was worth twelve hundred shillings, each member shall contribute half a mark: but if the deceased was a hind, each member shall contribute two oræ; if a Welshman, only one."

Among the rules of St. Catherine's Guild are the following:

"If a member suffer from fire, water, robbery, or other calamity, the guild is to lend him a sum of money without interest. If sick, or infirm from old age, he is to be supported by his guild according to his condition. If a member falls into bad courses, he is first to be admonished and if found to be incorrigible he is to be expelled. Those who die poor, and cannot afford themselves burial, are to be buried at the expense of the guild."

These were very humble beginnings, and it was long before there were any further developments. Other varieties of insurance, especially marine, grew slowly into favor. It was all done by individual underwriters; the rates were high and the term was short. There was insurance effected at that time for ransoming sailors and pilgrims in case of capture by Turks, but there were no data upon which to make scientific life calculations. The census was faulty, and the mortality register did not contain the ages of the dead.

Long before this, in the beginning of the third century, Ulpianus constructed a table of the expectation of life for the calculation of annuities under the Falcidian law of inheritance. We do not know upon what these tables were founded, for the census which was taken by the Romans every five years did not in itself furnish sufficient data. The number of births and deaths and the ages at death must be known also and we are reasonably sure that the Romans made no note of these. The table of Ulpianus compares favorably with some of the earlier English tables, but with improved methods of calculation and larger data the more recent tables show much greater longevity. On the other hand, it is possible that human life has lengthened its days since those times. Many students have come to this conclusion.

Towards the close of the seventeenth century, Graunt made some shrewd guesses as to the expectation of life, which were based on the London bills of mortality. As these bills did not give the ages of the dead, we can attach no scientific value to the results. The causes of death stated in these bills of mortality are very quaint and indicative of the state of medicine at that time. Who would recognize croup as the "rising of the lights"? The resemblance of hydrocephalus to "horseshoe head" is a little closer when it is recalled how this disease separates the bones of the head and makes the coronal suture look a little like a horseshoe.

In 1693 Halley published the first table which showed the probabilities of living at every age. This was based upon the death registers of Breslau in Silesia, as that was the only place where the ages of the dead were recorded. Even this was not used for many years.

Toward the end of the eighteenth century, Dr. Price constructed three mortality tables, the Northampton, the Chester, and the Swedish National tables. Of these the Northampton is by far the least accurate, owing to a curious cause which was not appreciated by Dr. Price. He thought that the number of baptisms represented the number of births, but in the town of Northampton there were a large number of Baptists who did not believe in infant baptism. By reason of this the ratio of actual births to baptisms was reduced so much that the population of the town was calculated to be stationary, whereas it was constantly increasing. Hence the table made the average lifetime in the town to be six years less than we can reasonably suppose it was then, and thirteen less than it is now. Unfortunately, this table was the one which many insurance companies adopted, probably for the very reason that it was more favorable to them and discriminated against the policy-holder. Of late years it has *been entirely* dropped by insurance companies, who now depend upon tables constructed from the combined mortality experience of several companies.

The first life-insurance policy of which we have legal record is dated June 18, 1583. It was on the life of William Gibbons, for twelve months from that date. It was underwritten by a number of individuals at the enormous rate of eight pounds per cent. The insured died on May 29, 1584, and payment was resisted on the ground that the twelve months referred to were lunar months of twenty-eight days each. This was promptly overruled in the courts. Prior to this there was insurance for ransoming sea captains and pilgrims, and very probably on ordinary lives. Annuities certainly were granted to individuals before this, but the rates were enormous. The highest expectation of life at this time was held to be seven years, and it was considered to be the same for all ages. The profits of the insurer under these circumstances were very great, and amounted to the grossest usury.

In 1699 the earliest project for mutual life insurance was devised. It was called "The Society of Assurance for Widows and Orphans." In many respects it resembled closely some of the modern assessment associations. There was an entrance fee of five shillings, and an assessment of five shillings more on the death of each member. This would have given five hundred pounds when the full membership of two thousand was obtained. The applicant had to furnish a certificate of his age, and also had to make affidavit that he knew of no illness which afflicted him, and that he was in a good state of health. He had to appear in person before the trustees, and might be rejected by them. As there was no medical examination, death within six months after issuing the policy did not avail. There were clauses providing for the forfeiture of the policy in case of death by the hands of justice. Military, naval, and seafaring risks were excluded, and in case of members dying in violation of these provisos, the policy was forfeited. Forfeiture also occurred in case the subscriber did not pay his assessment within seven days after notice. This scheme was certainly very ingenious and ought to have given satisfaction, but like most of these plans, the death rate *probably* increased in a few years, the assessments rolled up and became too numerous. It lived but a few years, and, so far as we know, died a natural death about 1711.

In 1706 a charter was granted to the "Amicable Society for a perpetual Assurance Office." This is the first life-insurance company of which we have any very definite information, and which survived the strain of early years. It was a purely mutual company; the rates were very high, and were the same for all ages between twelve and forty-five. Risks outside of those ages were not accepted. The annual income after deducting expenses was divided yearly among the representatives of those who had died during the preceding year. This was of course a most inequable arrangement. In some years the mortality was light and the individual return was proportionately large; but the next year it might be just the reverse. This was modified in later years, but not very successfully. The inherent faults of the scheme were too great, and the old Amicable finally succumbed in 1866, after an existence of one hundred and sixty years.

It is interesting to note some of the other features of this period. It was a time when gambling was rife in all classes of society and the South Sea Bubble was swelling. There was a company for suppressing thieves and robbers, and for insuring all persons from the same; a company for insuring against losses they shall sustain by servants, thefts, etc.; an insurance for horses dying natural deaths, stolen, or disabled; for assurance of female chastity; insurance from house-breakers; insurance from highwaymen; insurance from lying; insurance from drinking geneva; rum insurance. The foregoing is a very imperfect list of these schemes which amounted to nothing in the end. Real life insurance had to go through a feeble infancy and an overfed childhood before it reached its present vigorous youth.

In 1720 two proprietary companies were started, the Royal Exchange and the London Assurance. These at first confined their attentions exclusively to fire and marine insurance, but in 1721 their charters were amended so as to permit them to write risks on lives. They did a small business, at heavy rates, and nearly all of it was for short terms of a year or less. *Few could* afford the luxury longer, when it cost £5 5*s*. per year for £100 of insurance, or at the rate of 5¼ per cent.

Finally a number of gentlemen formed themselves into a purely mutual life insurance company, which still survives in England under its original title "The Equitable Society for the Assurance of Life and Survivorship." They endeavored to obtain a charter from Parliament, but this was frustrated through the objections of the Royal Exchange and the London Assurance. The London Assurance stated with ingenuous simplicity that it was a very poor business and that the expenses ate up all the profits. But as the new company required no capital, being purely mutual, these difficulties were overcome by drawing up a deed of settlement, which was finally enrolled in 1765, three years after the first policy had been issued. At first the outcome was very doubtful, and Francis says that, in order to give an appearance of age and strength to the delicate infant, they called the twenty-fifth policy the two hundred and seventy-fifth. The premiums were at first fifty per cent. to one hundred per cent. higher than those charged at present; but by the end of the century they had been very much reduced. The "Old Equitable" is still alive and flourishing, although in a very conservative way. To it we must bow as the first real representative of modern life insurance.

While in England life insurance was fostered and encouraged by law and custom, the reverse was the case on the Continent. In the end of the seventeenth and the beginning of the eighteenth century, ordinances forbidding the insurance of lives of persons were issued in the Netherlands, in Genoa, Amsterdam, and Rotterdam, and in 1681 Louis XIV. issued a similar one in France. The result has been that life insurance rather languished throughout the rest of Europe until within late years. But now it has become a fixed institution there, and a great volume of life insurance is written in most of Europe, a considerable part of which is done by American companies.

Life insurance in America really began with the formation of the Mutual Life Insurance Company of New York in 1843, a purely mutual company founded upon the level-*premium plan*. Of the original 250 subscribers or policy-holders, as they are called, only one remains alive. This was followed by the New England in 1844; the Mutual Benefit, the New York Life, and State Mutual, in 1845, and the Connecticut Mutual, in 1846. As regards the selection of risks that was made in those early days, Holden says: "Medical examiners were employed at the outset and their opinion was final. Good health and appearance in the applicant and no evident tendency to disease were alone required. Family record and remote disease were of unimportance; even the history of scrofula or threatened phthisis did not always reject. Examinations were cursory, as auscultation and percussion were not widely understood.

"Printed questions with certificates of friend, physician and examiner formed the examination. So long as these could be relied upon, selection gave good results; but physicians soon learned the disadvantage of testifying against their patrons, friends avoided any objectionable features, and the ordinary examiner (selected only by the agent) found loss of practice the penalty of rejection. So thoroughly corrupt was the old system that in one company in a single State eighty per cent. of the examiners were found unqualified, and the influence of such a condition was felt in the mortality for years.''

SECTION III

FUNDAMENTAL

THE foundation of all life insurance is based upon the correct mortality for each year of life. Although the duration of life of any one individual is most uncertain, the average duration of a multitude of lives can be calculated very closely. The factors which enter into such a calculation are numerous; the number living at each age, the number and age of those dying, the number of births.

Price, in constructing the Northampton table, made a mistake by considering that the number of baptisms represented the number of births. He overlooked the fact that the Baptists there did not practice infant baptism, and therefore his estimate of the population of the town was too small. On account of this he made the rate of mortality too high and the expectation too short. Thus at the age of thirty, the expectation of life was twenty-eight years and three months, five years shorter than it ought to have been. The publication of this table gave rise to a curious complication. It being favorable to the life insurance companies, they immediately began using it, although the injustice of it was soon detected. They were obliged to defend their action and did it so successfully that the British Government adopted the Northampton table for the calculation of Government annuities. Now the table is as harmful for this purpose as it was beneficial for the companies. For, if we think a man of thirty is going to live only twenty-eight years, we will give him a larger annuity than we would if he were going to live thirty-three years. This mistake cost the Government about $20,000,000 before it was corrected.

Here is a mortality table known as that of "Healthy English Lives," by Dr. Farr. It is based upon certain districts in England in which the annual mortality was 17 per 1000 or less. You may consider it as representing the proper mortality of the human race under favorable circumstances:

TABLE NO. I.

Age.	Average Mortality per 1000 per Annum.	
	Males.	Females.
0	112.80	92.64
1	35.08	31.88
2	21.77	21.70
3	15.44	15.33
4	12.62	12.55
5	10.26	10.28
6	8.28	8.44
7	6.73	6.98
8	5.50	5.95
9	4.61	5.18
10	4.01	4.72
11	3.65	4.50
12	3.56	4.28
13	3.62	4.74
14	3.89	5.07
15	4.26	5.49
16	4.74	5.96
17	5.25	6.47
18	5.84	6.94
19	6.42	7.36
20	6.95	7.66
21	7.14	7.85
22	7.32	8.02
23	7.48	8.14
24	7.62	8.30
25	7.75	8.42
26	7.84	8.54
27	7.93	8.65
28	8.02	8.78
29	8.12	8.83
30	8.21	8.94
31	8.28	9.05
32	8.35	9.13
33	8.45	9.24
34	8.52	9.33
35	8.65	9.42
36	8.76	9.51
37	8.89	9.66
38	9.03	9.75
39	9.18	9.88
40	9.38	10.01
41	9.60	10.12
42	9.85	10.32
43	10.10	10.50
44	10.39	10.67
45	10.76	10.88
46	11.11	11.11
47	11.53	11.37
48	12.00	11.61
49	12.48	11.88
50	13.01	12.21
51	13.64	12.54
52	14.28	12.88
53	14.95	13.28
54	15.72	13.68
55	16.56	14.10
56	17.43	14.58
57	18.35	16.16
58	19.39	18.20
59	21.39	20.02
60	23.67	22.27
61	26.06	24.40
62	28.50	26.53
63	31.08	28.82
64	33.88	31.24
65	36.80	33.90
66	39.99	36.69
67	43.43	39.84
68	47.19	43.13
69	51.24	47.91
70	55.64	50.84
71	60.40	55.22
72	65.67	60.05
73	71.27	65.25
74	77.42	70.97
75	84.00	77.19
76	91.07	83.93
77	98.62	91.13
78	106.89	98.99
79	115.52	107.33
80	124.93	116.25
81	134.70	125.84
82	145.23	135.89
83	156.43	146.88
84	167.94	158.13
85	180.18	170.34
86	193.38	182.93
87	206.55	196.42
88	220.80	209.98
89	235.65	224.37
90	250.73	240.32
91	265.62	254.77
92	281.91	272.08
93	301.24	287.67
94	314.49	307.68
95	335.05	321.43
96	348.84	345.03
97	369.05	357.14
98	396.23	375.00
99	406.25	400.00
100	421.05	407.40

From this mortality table the following conclusions[1] may be drawn:

1. During the years 0 and 1 the female mortality is much less than the male, being 92.64 and 31.88 per mille against 112.80 and 35.08. For the next three years it remains still a little less. During this period the distinctions between the two sexes in hygienic matters are practically *nil*. Both are dressed alike and fed alike. But in spite of this the female mortality is less.

2. About the age of five, or a little earlier, some difference in dress, exercise, and exposure is manifested. The girl stays in the house and plays with her dolls, while the boy is outside making mud-pies or throwing snowballs. The influence of these changed conditions is promptly shown in the female mortality. It now passes that of males. After this it steadily falls in both sexes to the year twelve, when it attains its lowest point. It is then 3.56 per mille for males and 4.28 for females. From that point it constantly rises for both sexes,

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[1] Extracted from "Comparative Vitality of Men and Women" by Brandreth Symonds, M.A., M.D., *American Journal of the Medical Sciences*, March, 1894.

being always larger each year than the preceding one.

3. It is commonly supposed that the establishment of the sexual function is attended with graver consequences in the female than the male. An inspection of the table throws some doubts on this. It is true that from twelve to sixteen the female mortality increases more rapidly than the male, the gain being respectively 1.68 per mille and 1.18. But from sixteen to twenty the increase is much more rapid on the male side, being 2.21, while on the female it is only 1.70. In England the age of puberty is not much earlier than fourteen or fifteen. Furthermore, those diseases which can be ascribed to the development of this function are usually chronic. However, another factor enters which doubtless has some influence. Most men have to begin at this age the struggle for existence, with its attendant hardships and vices. Of course, in this contest the weaklings would be thinned out early. It is impossible to decide which of these factors is the more important in increasing the male mortality at this period.

4. From this point the male mortality slowly

gains on the female until the year forty-six, when it just equals it, both being then 11.11 per mille. This year represents the practical end of child-bearing. To the influence of parturition we can probably ascribe the greater female mortality during the preceding years. The difference, however, is never great. It is most marked at the year thirty-four, when it amounts to 0.81 per mille. The male mortality is then 8.52 and the female 9.33.

5. The next ten years, from forty-six to fifty-six, represent the period of the menopause in women, a great climacteric. It is "the critical period for women" in the minds of the laity and most of the profession. But a careful examination of the table shows the contrary. The rise in female mortality during this period is just as gradual as it was before. Much more startling is the appearance of the male mortality. Certainly this is *man's* critical period. The old doctrine that he too had a great climacteric is most strikingly shown. In the ten years from forty-six to fifty-six the gain in mortality per mille per annum for males is 6.32, while for females it is only *3.47*. We can only guess at the causes of this

greatly increased mortality among men. Perhaps his dissipations just now make themselves felt; perhaps the syphilis of his youth is just drawing its last check; perhaps the hardships of his occupation have just now bankrupted him. But why should these manifest themselves at a period which is popularly fraught with so much peril only to women?

6. From this point the mortality of women gains so rapidly on that of men that the period of fifty-six to sixty might be called a "critical period" for them. After this the two run on to the end of the chapter in nearly parallel lines, the female being always less than the male. The difference between the two ranges from 1.4 at the age of sixty, to 8.7 at the age of eighty. After this it fluctuates considerably.

7. It is often said that although woman's average longevity is greater than man's, yet great age is attained only by man. Biblical references on this point are not of much value, for in the days of the patriarchs few women received historical consideration. In a list[1] of

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[1] *Insurance Guide and Handbook*, by C. Walford, London, 1867. The value of the evidence in most of these cases of extreme longevity is very dubious, but this applies equally to both sexes.

about three hundred persons who had attained the age of 120 years, or greater, the writer counted the names of over sixty women. This is twenty per cent., and a fair proportion when one considers how little historical importance was attached to women a century or two ago.

8. Some of the inequalities in the mortality of men and women have been explained in the previous sections. But one great fact remains inexplicable, and that is woman's greater tenacity of life. It cannot be due to her sheltered position and comparative freedom from vice, dissipation, worry, and toil, for it is manifested in the cradle as well as in old age. It is strikingly shown in the years of infancy; then the interregnum of bad management in childhood, and later of childbearing, affects it adversely. But after these it again asserts itself.

Perhaps this superior vitality is a relic of the time when our ancestors swung from tree to tree by the aid of their tails. They were undoubtedly polygamous. At least Darwin says that the highest apes now extant are polygamous.[1]

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[1] *Descent of Man*, page 217. He mentions the gorilla, some baboons, mycetes caraya, and cebus *capuchinus,* as being all polygamous.

If they were polygamous, there must have have been an excess of females. This excess could have been maintained in only two ways, either by a plurality of female births or a greater tenacity of life in those females which were born. But we know that at present there is a plurality of male births everywhere, although the popular impression is to the contrary. An inspection of the birth reports of the following countries and States for the years mentioned proved this conclusively: Russia, 1858; Austria, 1857; France, 1860; England and Wales, 1860; Prussia, 1861; Spain, 1861; Belgium, 1860; Bavaria, 1860; Norway, 1860; Greece, 1861; Indiana, 1886; Michigan, 1872; New Hampshire, 1885. In every case there was a plurality of male births. The average of the whole showed thirty-nine males to thirty-seven females.

This fact disproves the existence of a female plurality at birth, and it seems fair to assume that such was the case likewise in those primitive times. If so, the hypothesis of a greater tenacity of life among the primeval ape-women must be accepted. Perhaps from these Eves it has descended to their present successors.

The mortality of a life-insurance company ought not to be greater than that indicated in this table, for the selection of risks should be done with such care that the policy-holders of a company must be considered in as favorable conditions as the people from whose mortality this table was constructed.

TABLE NO. II.

MEAN AFTER-LIFETIME, OR EXPECTATION OF LIFE IN YEARS.

Age.	Males.	Females.
0	48.56	49.45
5	54.39	53.93
10	51.28	50.88
15	47.20	47.04
20	43.40	43.50
25	39.93	40.18
30	36.45	36.85
35	32.90	33.46
40	29.29	30.00
45	25.65	26.46
50	22.03	22.87
55	18.49	19.24
60	15.06	15.69
65	12.00	12.58
70	9.37	9.85
75	7.15	7.52
80	5.37	5.64
85	4.01	4.19
90	2.99	3.11
95	2.25	2.32
100	1.69	1.75

The elements which enter into the selection of risks are as follows:

1. *Pecuniary.*—Only those people whose income is larger than the needs of life demand can afford to pay the premiums. This cuts out entirely the poorest classes. Those who are a grade higher have to content themselves with policies for small amounts in industrial companies the premiums for which are much higher than in the regular companies in order to provide for the higher mortality in this class of people.

2. *Locality.*—Certain districts and countries are too unhealthy or too uncivilized to allow insurance to be written in them, unless perhaps at advanced premiums that are required by a higher mortality.

3. *Health.*—Those who know themselves to be ill rarely seek life insurance. Every one dreads the possibility of rejection by an insurance company, and no one will court it when the possibility amounts to a certainty.

These three elements of selection may be called natural, while the next two may be considered artificial.

4. *Occupation.*—Certain occupations are re-

garded as too hazardous to permit insurance, even though the wages paid may be large. This subject will be taken up more fully later on.

5. *Medical Selection.*—It has often been stated that no medical selection is necessary for life insurance, and the argument is something like this. All men have to die. Why not therefore calculate upon the mortality of the whole population and admit them all to life insurance? Some expense is thereby saved and at the same time the opportunity is given to everybody to partake of the blessings of insurance. Something of this kind is now under trial in Germany. It is a stupendous scheme of insurance against invalidism and old age but does not include life insurance. Nearly all wage earners over sixteen, whose average annual earnings do not exceed about $500 are compelled to participate. A most elaborate system of registration and espionage has been devised, so that no person of the twelve millions or more entitled to its benefits may escape the blessings thus thrust upon him. This plan has not been tried long enough to determine *its stability;* but we could draw no inference

even from its success. It is a scheme forced by an almost autocratic government upon a submissive people, at least more submissive than we are. How would it succeed if applied to our life-insurance methods? A life-insurance association or company of to-day is, with us, a voluntary aggregation of individuals. If there were no way by which those who are below the present standard of prospective longevity could be excluded from its advantages, it would be composed exclusively of such inferior specimens. Consequently, the mortality rate would be vastly higher than that of the average population. No sound person would join who could obtain insurance in a company that adopted a higher standard. Man is indeed becoming more altruistic, and the growth of life insurance itself indicates this. But his altruism is still far below the level which would cause him to make personal sacrifice of strength, time, and money for the benefit of some unknown stranger, perhaps thousands of miles away. He is eager to make such an offering upon the altar of home, when he can thereby save his wife and children from want, perhaps from shame and dishonor. But he will make no such effort for the unknown weaklings who as a class will surely die before their time. He wants to associate himself with those who are as strong as he is, and whose expectation of life is as great. Therefore the interests of the policy-holders who are already in a company demand that none be admitted unless they be up to the standard already adopted. If impaired risks are taken in such a company, they must be regarded as substandard and their premiums must be rated up so as to equalize them with the standard.

Insurance Companies

1. *Mutual.*—In a mutual company the control and management are determined by the policy-holders exclusively. Each of them has a voice and vote in the election of the trustees, to whom they delegate the power necessary to run the company. Furthermore, all the profits of the company belong and are paid to the policy-holders. This is a very useful and successful form of life-insurance company, and considerably more than one half of the life insurance in force to-day is carried by such companies.

2. *Stock or Proprietary.*—A stock company is controlled by stockholders who own the capital of the company and elect the directors who manage it. All the profits are taken by the stockholders, as the policy-holders have nothing to say about the management and no share in the dividends.

3. *Mixed.*—This kind of a company has a capital which is owned by stockholders and these elect the trustees who control and manage the company, the policy-holders having no voice in this. On the other hand only a fixed percentage, usually small, of the profits is paid to the stockholders, and the balance is turned over to the policy-holders. This is a fairly common form of life-insurance company, and has been very successful in some instances.

4. *Industrial.*—This term is applied to a company which issues policies of small amounts, especially to the working classes. The premium payments are usually weekly and are quite high. The company itself may be mutual, proprietary, or mixed.

5. *Assessment or Beneficial.*—This is a voluntary association of individuals, each of whom

agrees to pay an assessment on the death of a member, or at irregular intervals in order to keep a mortuary fund up to a certain sum. During the early years of an assessment association, and while the membership is increasing rapidly, the effect of selection, medical and otherwise, is such as to cause a mortality considerably less than the expected. As a result, the assessments are few and the policy-holders are satisfied. After a few years, however, the influence of selection diminishes, the mortality rises, and the assessments increase. As this condition becomes more marked, those who are healthy and able to secure insurance elsewhere do so and withdraw from the association. This makes matters still worse for those who are left, for they are so far below the standard that they cannot obtain insurance in another company or association. The mortality now rises with increased rapidity, the assessments become very large, and in a short time bankruptcy ends the painful scene. This is the end of most assessment associations. Those which survive owe their continuance to the development of strong social or philanthropic ties which prevent the healthy from leaving when the mortality rises to its normal. In this case they may last successfully for many years.

Insurance Policies

Ordinary Life.—In this class the premiums are paid during the entire life of the policyholder, and are calculated upon the entire mortality from the age at which the insurance is effected.

Limited Payment Life.—In this class the premiums are based upon the same data as in the former class. Instead of being distributed over the entire life, however, they are arranged so as to be paid within a limited number of years, usually ten, fifteen, or twenty. The policy itself is only payable at death, as in the former class. Although the premiums are higher, the limited payment life policy does not allow any increased mortality, for the total premiums are the same in both cases, in the one class being distributed over the entire life while in the other they are concentrated within a few years.

Term Insurance.—In this class the insurance is for a certain number of years and the premiums are based upon the mortality of these years only, not of the entire life. It is like fire insurance in that if the insured does not die before the end of the term, the contract expires and the company retains all the premiums he has paid.

Pure Endowment.—This is just the reverse of term insurance and is strictly speaking not insurance at all. The policy-holder agrees to pay a certain premium during a certain term of years. If he is alive at the end of the term, and has paid his premiums regularly, the Company then pays him the face of the policy. This will amount to the premiums which he has paid in, with compound interest plus his share of those policies which have been forfeited by death or non-payment of premiums from any cause. For in pure endowment only the survivors win, while those who pay a few premiums and then for some cause fail to continue lose all they have put in. It is evident that for such a policy no selection is necessary, either medical or otherwise, for the greater the mortality, the larger will be the reward of those who survive.

Endowment Insurance.—This is a combination of pure endowment and term insurance.

The policy is for a term of years, and the premiums are based upon the mortality of those years, not of the entire life. If the policyholder dies during the term, his beneficiary is paid the face of the policy in conformity with the element of term insurance which is in the contract. If he survives the term, the face of the policy is paid to himself, or to the beneficiary, if he so elects, in conformity with the endowment feature of the contract. Of course, there is no continuance of the insurance after this. When the word endowment alone is used, it usually refers to endowment insurance.

Tontine.—It is necessary to say a word about the tontine plan, which has been revived in a very modified form. This owes its name to Lorenzo Tonti, who lived during the seventeenth century. His original plan was as follows: A certain number of persons pooled together a specified sum (without reference to age or sex) and at the expiration of each year the interest of this fund was divided among the subscribers who were living, and so on from year to year, until the last survivor received the whole interest. After the death of the last survivor the principal reverted to the founders of the scheme, *i. e.*, the State, for their own use. This termination sufficed to kill the original plan, and it was soon altered so that the entire original sum was received by the last surviving member. Even on this basis it was too great a speculation, and never had much popular support. The results that were obtained in some of these tontines were almost fabulous. One was started in 1689, the subscription being 300 livres ($75). The last survivor of this in 1726 was a widow of ninety-six years of age, and she received an income from it of 74,500 livres ($18,800).

At the present time all purely tontine methods in life insurance have been dropped. There are, however, methods by which the insured allows all his profits from early lapses, compound interest, etc., to accumulate for a number of years, usually ten, fifteen, or twenty, and then receives the whole of it in one dividend. This so-called semi-tontine system is the one adopted by a large proportion of insurers in this country.

SECTION IV

RELATIONS BETWEEN THE EXAMINER AND THE COMPANY

WHEN you are selected by the home office as medical examiner, you are appointed solely in consideration of your professional ability, sound judgment, moral character, and integrity. You are not appointed by the agents nor responsible to them, though you are expected to assist their work by prompt attention to the applicants for examination brought before you.

You must under no circumstances mention to agents or other examiners the names or conditions of persons you have examined. You as medical examiner are the guardian of the interests of the company. You furnish the company on its appropriate blanks, an explicit and truthful statement of the physical conditions of the person proposed for insurance. For this you receive a fee, whether the applicant be accepted or rejected. Your relations to both the company and the applicants are confidential in the strictest professional sense. You should consider any information regarding them, obtained by you in the course of the examination as inviolable as it is held to be in the relation of physician and patient, and in behalf of the company you should preserve a discreet silence as to any applicants for insurance whose cases may have been either accepted or declined, or are still under consideration.

In many instances predisposition to disease may be acquired from habits of life, occupation, exposure, accidents, unhealthy residence, previous attacks of disease, etc. It is your duty to make a close examination of all the facts bearing upon such cases, and to state in the application or in a private letter to the medical officers, such modifying circumstances.

If, for any reason, you do not wish to present in the application certain facts disclosed by the examination, you must write and mail at once a confidential letter to the medical department at the home office, detailing such information. *In this way* nothing of importance affecting the risk need be withheld from the medical director.

In communicating with the home office, you are requested not to give information concerning more than one case on the same sheet of paper, but to write a separate sheet in each case.

If you become aware that an applicant is wilfully making a misstatement, you should not correct the record if the applicant insists upon its remaining as he has given it. It becomes your imperative duty under those circumstances to write at once to the home office a confidential letter giving full particulars in regard to the misstatements. This is a very important matter and must not be neglected or delayed.

Your report should be free from ditto marks, alterations, interlineations, or erasures. Unavoidable corrections must be made by drawing a line in ink through the words at fault, and must be duly attested by your initials with date of such attestation.

The company holds you as medical examiner responsible for the identification of applicants, and you are instructed to make no examination unless the applicant is personally or satisfactorily known to you.

Whenever an applicant is examined on a second occasion for new insurance or a certificate of health, you must not make a copy of any part of the former paper, but must in every respect make a new examination, asking each question and writing down the reply, making new measurements and a thorough physical examination.

You must invariably date your examination at the time and place at which it is made.

You may solicit applications for insurance and participate in the commission accruing therefrom, but you must in every instance submit the applicant to another regularly appointed examiner for examination. It is manifestly improper that you should act as examiner and agent at the same time.

Part of the examination blank is composed of a series of questions which you are to ask the applicant. His answers are to be recorded by you with great care and exactness. You must again be warned of the endeavor, unconscious or otherwise, of an applicant to minimize his past ailments. He is in a different position now from what a patient is. He tries to make the best appearance that he can, and speaks lightly of symptoms which he would magnify to the family physician. Occasionally you will meet a hyper-conscientious person who insists that trivial facts be recorded against him. But these cases are very rare. You must therefore question your applicant closely and even sharply at times, and unless you are sure of the insignificance of some symptoms which he may mention, you should be very careful to record everything that he tells you.

Be sure that you answer every question. An omitted answer is an occasion frequently of annoying delay; a delay which may be fatal to the hopes of the agent. Furthermore, an omitted answer occasions needless and vexatious correspondence, and puts an examiner in disrepute with the company and the agent. No matter how unimportant or trivial a question may seem to be to you, it must be answered by at least "Yes" or "No."

SECTION V

PERSONAL HISTORY OF DISEASE

THE diseases about which individual statements are requested by a life-insurance company comprise a long list.

They will be classified under the following heads:

1. Diseases of the brain, spinal cord, and nervous system.
2. Diseases of the respiratory system.
3. Diseases of the circulatory system.
4. Diseases of the digestive organs.
5. Diseases of the genito-urinary organs.
6. Diseases not otherwise classified.

It will be recognized that no hard and fast rule can be set, as many of these so-called diseases are merely symptoms which may arise from several different lesions. If any one is dissatisfied with the position of any disease in this scheme, he is at liberty to change it in his *mind.* In most blanks they are arranged according to the order above indicated. In some they are arranged alphabetically, and in a few there is no effort at orderly arrangement. The blanks of all the leading companies have been inspected and every disease mentioned in them is included in this section.

When going over this list with an applicant during an examination it is a good plan to give him a blank such as you have yourself, so that he can follow with his eye, if he can read, the questions as you call them off. In answering these questions great care must be taken to give the date of each illness; the number of attacks; the duration of each attack; the date of each attack, if there was more than one; the severity; whether there were any complications; whether there were any sequels; and whether the recovery was complete. Now that may sound formidable, but as a rule an applicant will acknowledge only one or two of this long list of diseases, and thus the writing is not a very laborious matter.

Diseases of the Nervous System

Dizziness.—Most of us have had a little dizziness or *vertigo* some time in our lives, and the slight dizziness which accompanies subacute gastritis, the so-called bilious attack, or which can be accurately ascribed to constipation is of very little consequence provided the applicant is under forty years of age. If the applicant is over forty, any dizziness which he mentions should be considered quite carefully, for it may be an early symptom of cardiac weakness, or of vascular changes in the brain. A point to be noted is whether there is any loss of consciousness during the attacks of dizziness, even though the unconsciousness be only momentary. This should be carefully inquired into owing to its bearing on the minor forms of epilepsy.

Unconsciousness.—Syncope, *loss of consciousness*, or *fainting spells* of any kind should be carefully noted and recorded; whether due to traumatism, to emotion, or to some illness. In all cases a full explanation of the cause of each attack should be given. It is especially suspicious if no cause can be assigned, for it may then indicate a cardiac weakness, some vascular cerebral change, or epilepsy.

Epilepsy.—Full details should be given concerning any epileptic seizures, especially their frequency, severity, and the date of the last symptoms. Epileptics are short-lived and poor insurance risks, although they are sometimes possessed of great mental powers as in the case of Julius Cæsar and Mahomet.

Convulsions.—Any sort of convulsions or fits other than epileptic should be inquired into very carefully, and particular note made of the cause. This does not refer to the convulsions of infancy, for these can be overlooked if there have been no symptoms at all since. If the convulsions are due to any organic cause, such as nephritis, it is evident why the applicant is not a good risk. If due to a functional cause, such as hysteria, catalepsy, insanity, etc., they indicate a neurotic weakness which makes the risk undesirable.

Paralysis.—This should be carefully considered, and the kind and cause of the paralysis should be carefully inquired into. Any paralysis of cerebral origin is very serious. Anterior poliomyelitis is apt to leave permanent disability, and the extent and nature of this disability should be stated in all cases. If it involves the lower extremities, the amount of interference with locomotion should be specifically described and the need of crutch, cane or prothetic apparatus should be stated. Bell's paralysis is not an infrequent condition. But you must make sure that the facial palsy was due to a peripheral neuritis, not to central lesion.

Apoplexy.—This requires no elaboration, except that it refers to cerebral apoplexy, and always causes the rejection of a risk.

Insanity.—Any form of *mental derangement* should be noted with great care, for it almost always indicates a short life.

Nervous Prostration.—If the applicant acknowledges having had this or *nervous exhaustion*, you should question him closely as to the character of the mental symptoms and whether there was any possibility of its being an attack of insanity. Bear in mind also that *insomnia* is a common symptom, both of insanity and neurasthenia, and if acknowledged, should be investigated closely with reference to this possibility.

Delirium Tremens.—Full details should be given and special note should be made as to whether the applicant has been a total abstainer *since the* attack.

Neuralgia.—The ordinary neuralgias, from which every one suffers occasionally, needs little or no comment. If persistent or extensive as in sciatica, it should be mentioned and described, although it is often due to a peripheral neuritis which disappears, having no effect on the general constitution. It may indicate, however, some serious mischief of the brain or spinal cord.

Tremor.—If this is present in the hands, head, or tongue, it should be noted, provided it indicates organic trouble. If confined to the writing hand, it is usually a symptom of the occupation-neurosis, known as "writer's cramp." You must remember, however, that many illiterate persons who seldom use a pen are able to write their name only with the greatest difficulty, and their nervousness then shows itself in a well defined tremor.

Any Disease of the Nervous System.—Some general question like this, or "any disease of the brain or spinal cord" is usually asked. Full particulars of any disease that the applicant acknowledges must be given. If he has any symptoms which might indicate a lesion of the central nervous system, you should always test the patellar reflex and pupillary reflex, and note whether the pupils are normal, contracted, or dilated, or unequal.

Headaches.—We all have headaches more or less, and a negative answer should be recorded to this question unless the headaches are severe, protracted, or frequent. If you think that the symptom is of sufficient importance to warrant an affirmative answer, you should give full particulars, the frequency, severity, duration, and the probable cause of the headaches, whether due to eye-strain, overwork, uric acid, faulty sanitation, etc.

Sunstroke.—Full particulars must be given in all cases, and you should question the applicant closely with reference to any sequels, such as epilepsy, headaches, or inability to work in the sun. It is sometimes followed by more serious sequels, such as partial paralysis, mania, or dementia, indicative of a chronic meningitis, or of a deeper-seated lesion.

Impairment of Sight.—Any defect in vision should be noted and the cause, progress, and present condition recorded. It is not worth while to take any notice of mere errors of refraction which are corrected by glasses.

Impairment of Hearing.—This should be carefully studied and full details should be given in regard to its cause, duration, progress, present degree of deafness, and whether bilateral.

Discharge from the Ear.—Full details should be given concerning any otorrhœa, whether acute or chronic. If chronic, give all the particulars obtainable as to the character of the discharge, whether serous or purulent, or bloody, whether offensive, whether intermittent or constant; whether associated with pain and tenderness; and the date when it completely ceased, if not discharging at the time of the examination; and whether it has affected the hearing? If you can make an aural examination, do so and report the results as to the situation of the perforation, the presence of granulations, polypi, or carious bone. I have spoken thus fully on this subject on account of the lack of importance which the average person attaches to a discharge from his ear, provided it does not cause him pain. Many physicians even do not regard it as of much consequence. We have found out, however, from experience, that these cases, as a class, are not good insurance risks. Some of them die from the extension of the inflammation to the adjacent regions; but quite a fair percentage develop tuberculosis.

Diseases of the Respiratory System

Chronic or Persistent Cough or Hoarseness.—I cannot impress upon you too strongly the importance of this question. Many a *patient* will come to you with a history of chronic cough which on investigation you will find to be due to simple rhino-pharyngitis, the so-called nasal catarrh of the American. This is of little consequence unless the case is a severe one. But you will rarely find an *applicant* for insurance who acknowledges a chronic cough of this nature. He says to himself, "Why this is simply catarrh and everybody has it, and so I will not mention it," that is, if he reasons at all upon the subject. Therefore, if an applicant for insurance acknowledges that he has a persistent cough or hoarseness, you must question him very critically and examine him very carefully to determine exactly the cause of it. You must satisfy yourself absolutely that it is *due to* mild chronic rhino-pharyngitis, and that there is no involvement of the deeper respiratory structures.

Spitting or Coughing of Blood.—This is a symptom of the gravest significance, and any acknowledgment of it should be noted. No matter how much an applicant maintains that it was of no consequence, do not be remiss in recording it. Be very careful to get the correct date of the occurrence and note especially if there has been more than one hæmoptysis. It is one of the early symptoms in a large percentage of the cases of pulmonary tuberculosis. Frequently the attack is abortive and the applicant apparently recovers, but in most of these cases the process of recovery consists in an incapsulation of the diseased tissue. This diseased tissue usually contains tubercle bacilli, or their spores, and therefore the condition should be termed one of latency and not of recovery. The danger of auto-infection is so great that until many years have elapsed a life-insurance company does not care to put the risk upon its books.

Do not fail to record, therefore, every hæmoptysis no matter how trivial the applicant makes it out to be. Even if you are convinced that it was of no consequence, give full particulars and state your firm conviction in the matter. If the applicant acknowledges having had *consumption*, give full details.

Asthma.—Full details should be given concerning it, especially as to the frequency and severity of the attacks; whether they are growing milder and less frequent, and the probable cause. If it is associated only with hay-fever, be sure to note this fact, as hay-fever asthmatics form a better class of risks than the ordinary asthmatics. If the asthma or shortness of breath is due to any other cause, such as bronchitis, obesity, etc., give full particulars. But be suspicious of any one who acknowledges a *shortness of breath*, or *difficulty of breathing*.

Any Disease of the Chest and Lungs.—This includes among other diseases pleurisy, pneumonia, and bronchitis. The latter, if due to an ordinary cold, hardly requires any attention unless the attacks are frequent or recent.

Diseases of the Circulatory System

Disease of the Heart.—An applicant for life insurance seldom states that he has organic disease of the heart, for those who know that they have such a condition present do not apply for insurance except to a company which issues substandard policies. Occasionally an applicant will give a history of pericarditis or endocarditis from which he claims to have recovered. Such a history will necessitate a very careful investigation and examination, with a full report of all the facts to the company. Even if they have entirely recovered, the danger of recurrence in these cases is great, especially if the origin of the lesion was rheumatic.

If an applicant acknowledges any irregularity or intermittency, this should be inquired into carefully and full details noted. But do not forget that occasionally a hyper-conscientious person will speak of palpitation of the heart when he only means the increased action due to exertion. In all cases where the applicant acknowledges having had palpitation or any functional disturbance of the heart, you should examine that organ with great care as to its size, location, and the existence of any murmurs.

Enlarged or Varicose Veins.—These should be fully described, especially with reference to the past or present existence of ulcers and the need for elastic support.

Aneurism.—Any history of this should be set out in full.

Pain in the Region of the Heart.—In most cases this is simply due to intercostal neuralgia, but as it may be a symptom of angina pectoris, its acknowledgment should be followed by very careful questioning and examination.

Diseases of the Digestive Organs

Dyspepsia or Indigestion.—Most of us have a mince-pie dyspepsia once in a while, and such a condition is hardly worth noting. But if the attacks are at all frequent, or if the condition is a chronic one, it should be investigated with care and full details given. This particularly applies to those cases which are under the standard weight. You should also note whether there has been any loss of weight. Dyspepsia is rarely in itself a serious menace, but it is often one of the early symptoms of tuberculosis, of chronic nephritis, of organic heart disease, of organic disease of the nervous system, and of *many* other conditions.

Diarrhœa.—The ordinary acute attack of diarrhœa which many suffer from in the summer months is not worth mentioning. But if the attacks are frequent, or prolonged, or if a condition of chronic diarrhœa, or of *dysentery* has become developed, then full particulars should be given.

Appendicitis.—All details should be carefully recorded, especially the number of attacks and their dates. If an operation has been performed, it should be noted whether the appendix was removed; whether drainage was used, and what is the present condition of the scar.

Intestinal Colic.—The more we know about intestinal colic the less frequently do we find cases of enteralgia. For example: In 1896 there was examined an applicant who was a young man of excellent physique, but quite nervous and fussy about himself. He said that one year before he had had an attack of typhoid fever, following which he had had repeated attacks of mild abdominal cramps. These attacks were not severe, lasting only an hour or two; only occurred once a month or so. His physicians, two of the best men in New York City, were seen personally and they both said that in their opinion the cramps were simply due to an irritable colon, a sequel to the typhoid which he had had one year before. They had examined him repeatedly, and their testimony was so strong as to the entire absence of any organic changes to account for this condition, that he was accepted for a policy. One year later he was operated on for appendicitis, which he had evidently had for a long time, as there were numerous intestinal adhesions present. Fortunately, the operation was a success, and the man is still alive and in much better health than he was at the time when he was said to have this irritable colon. This history shows how much importance should be given to enteralgia or repeated intestinal colic. Unless you are certain that the intestinal colic was infrequent and of no consequence, do not fail to report it, however much the applicant may belittle it.

Hepatic Colic.—Full particulars should be given in these cases, especially the number of attacks and the date of each. The passing of a stone should be inquired into, but this is not of so much importance, as it frequently cannot be found. The more we know of gall-stones, their frequency, and the serious complications which they often cause, the greater is our dread of them. If any abdominal symptoms, such as pain, intestinal gripes, dyspepsia, tenderness over the liver, or light attacks of jaundice have occurred since or between the attacks of hepatic colic, they should be carefully recorded, as they may indicate organic changes in the gall-bladder or ducts.

Diseases of the Liver.—This does not include the ordinary bilious attack which is, as you are doubtless aware, in ninety-eight per cent. of the cases simply a sub-acute gastritis, and is usually not worth mentioning. If the applicant gives any history of jaundice, try and ascertain the cause, especially with reference to the possibility of a gall-stone.

Hemorrhoids.—External hemorrhoids, unless they have required surgical interference, are of no consequence. Internal hemorrhoids do not require mention unless they give rise to hemorrhage, or are very large.

Fistula.—This, whether rectal or otherwise, should be carefully investigated and full particulars given. The relationship of it to tuberculosis should not be forgotten when questioning the applicant. Any disease of the rectum should be carefully recorded, although *pruritus ani* unless marked, need hardly be mentioned. If an applicant acknowledges having had *fissure of the anus*, differentiate sharply between it and fistula.

Tape Worm.—If an applicant acknowledges having had this highly unpleasant but not alarming passenger, you must ascertain if the head was passed. Unless the head is passed, the chances of re-development within a few months are considerable.

Diseases of the Genito-Urinary Apparatus

Renal Colic.—You should carefully note the number of attacks and the date of each, and whether any stone was passed. If the term *gravel* is used, be careful to differentiate from it the precipitate of urates and uric acid which is sometimes thrown down from concentrated urine on standing and cooling. This is of little consequence, while real gravel, formed in the bladder or kidneys, is a serious matter and requires a full history of the facts.

Urination, Difficult.—This indicates usually prostatic disease, or a stricture, and is therefore a serious matter. Do not confound it with the difficulty in urinating at command, which is sometimes experienced by nervous persons.

Urination, Excessive or Scanty.—It is not easy to determine from a layman's ideas, whether he is urinating more or less than normal. We can accept his statement as to the daily number of micturitions, and if this is more than eight, it should be noted. It is more difficult to judge of the quantity of urine, but if he acknowledges urinating during the night or early morning, that fact generally indicates an excessive quantity of urine.

Disease of the Bladder or Kidney.—Any disease of these organs, not otherwise specified, should be fully described if acknowledged by the applicant. Hematuria, in particular, should be carefully noted and a possible malarial origin should be investigated.

Enlarged Prostate.—Any history of this should be given in full, for it is a serious matter, owing to the possible involvement of the bladder or kidney.

Hydrocele or Other Disease of Testicles.—These should be described carefully and all details given.

Syphilis.—This is a most important subject and one about which there is a great deal of deception practised. If an applicant acknowledges having had any venereal sore, full particulars should be given concerning it, no matter if you are fully convinced that it was a simple ulcer, the so-called chancroid. In syphilis proper, the date of the initial lesion, the presence and character of the secondary symptoms, and the nature and duration of the treatment should be very carefully recorded. Do not fail to seek carefully for evidences of any tertiary symptoms, especially those relating to the nervous system and the viscera. The date of the last symptoms, and also of the last treatment should be carefully noted. In all cases if it is possible to obtain a statement from the attending physician, this should be done. Not infrequently you will find that applicants do not care to have their venereal mishaps spread upon the examination report. In that case, of course, you must note the facts on a separate sheet of paper and send it directly to the medical department, but be sure that it is mailed in time to reach the home office *before* the application.

It is not worth while to record an attack of *gonorrhœa*, unless it was fairly recent or associated with some complications or sequels. Most men will not confess it, and those who do usually regret the confession. If recent, or if it was associated with rheumatism or other severe complications, then a note must be made of it.

Stricture.—The points to be noted concerning this are: the date of occurrence, the character of the treatment, when that was stopped, and how large a sound could be passed and when. In stating the size of the sound, always give the scale, whether French, American, or English. The structure and functions of the kidneys are almost invariably impaired in organic stricture of long standing. If once affected, it is doubtful if they ever return to a perfectly healthy condition.

Unclassified Diseases

Malarial or other Fevers, such as yellow fever, typhoid, smallpox, erysipelas, and influenza, require no more elaboration than is mentioned at the beginning of this section. If the attack occurred within a year, it is well to state whether the applicant has regained the weight that he had prior to the attack.

Rheumatism.—Note carefully whether muscular or articular, the number of attacks, the severity, duration, and date of each, and whether there have been any subsequent symptoms which the applicant has noticed, even though these do not amount to a recurrence. Particular attention should be paid to the presence of heart-symptoms and the examination of the heart should be thorough. If only the muscles are involved and no joints affected, the disease is of little significance, and it is doubtful if it is due to the same cause as articular rheumatism. Although this latter is probably a bacterial disease, there is a marked tendency to recurrence and the heart is liable to become affected in any attack, no matter how slight. For these reasons we need the full information set forth in the beginning of this paragraph.

Gout.—Although this usually attacks the joints and in that respect resembles articular rheumatism, there is no relationship between them. The joint manifestations of gout are *due* entirely to the excess of uric acid in the blood which is deposited in the tissues of the joints. The existence of uric acid in excess in the blood indicates deeper constitutional conditions which have a marked effect upon all the tissues of the body, especially the vessels and kidneys. For these reasons when an applicant acknowledges having had an attack of acute gout, you must get full details and note especially the number of attacks, and the date, location, and severity of each. Ascertain whether there have been any gouty symptoms at all between the acute attacks and the nature of these. Examine the urine and the blood-vessels with great care. Examine the ears and hands carefully for the presence of tophi.

Chronic diseases of the skin.—These should be investigated with care. This remark does not apply to the ordinary acne, but such conditions as psoriasis, eczema, etc. If slight, they are of small consequence, but if at all severe, they indicate a systemic disturbance, which may show itself in serious lesions of the viscera or vessels.

Tumors or *neoplasms* of any kind require considerable explanation. If one is still present, a full description should be given of it. The presence of pain or tenderness should also be noted, and whether it has changed in size within the past year. If it has been removed, the report of the operating surgeon should be obtained with a microscopical diagnosis if possible.

Abscess.—Repeated abscesses may indicate a constitutional dyscrasia, such as diabetes. A chronic abscess is usually tubercular. In either case full details should be given.

Ulcers.—The possibility of these being malignant or syphilitic should be carefully investigated, especially if they required an operation or internal treatment.

Scrofula, Swelling of Glands, Suppurating Glands.—If these conditions are not due to tuberculosis, they indicate a diathesis which predisposes to it in many cases, or which may indicate syphilis or some disease of the blood-forming apparatus, such as leukæmia. In every case careful investigation should be made as to the possible cause.

Dropsy.—This is a symptom of so many conditions that its significance varies greatly. If confined to the lower extremities it frequently indicates merely varicose veins. In the upper extremities or face it is of more serious import.

If abdominal it is of the gravest significance. It should be fully described and the probable cause assigned.

Surgical Operation.—Full details should be given as to any surgical operation which has been performed. If an amputation, it should be distinctly stated whether it was on account of traumatism, or some disease. If a tumor or ulcer has been operated on, the nature of it should be stated.

Vaccination.—As you cannot always rely upon an applicant's statement as to the success of a vaccination, it is better to inspect the scar, and some companies require this. The need of care in this point is considerable, for many companies except death by smallpox if the applicant has not been vaccinated.

Deformity.—The loss of a finger or toe is hardly worth recording, except as a mark of identification, but any further mutilation should be carefully noted. In the case of an amputation, you should note it's location, cause, date, and the present condition of the stump. If it is in the lower extremity, you should note whether the applicant uses an artificial leg, crutch, or cane.

If an applicant ever acknowledges having had *curvature of the spine*, you should carefully examine the back so as to determine the present condition. The kind of curvature should be carefully noted, and the cause determined, if possible. The degree of curvature should be stated, and also the present or past need of supporting apparatus.

Hernia.—You should carefully examine any hernia which an applicant acknowledges having. If unilateral, it is well to examine the sound side at the same time, for not infrequently some weakness can be found there. You should note its location, reducibility, and the presence of a well-fitting truss. Inquire if it has ever caused any symptoms of incarceration or strangulation, and if so, be sure to record them with full particulars.

This list of diseases has been very long and tedious, but fortunately no company uses the entire list. Some of them may seem unimportant to you, but it is not your business to criticise the home office in this respect. You should inquire about each disease given in the *examination* blank on the lines laid down in this section and report on each as concisely as possible.

In going over this list, the terms used have been more technically professional than the examination blank itself employs. But, although the blank is less technical, you must dilute it still more when you make an examination. For example, do not say "Colic, due to renal or hepatic stone"; but ask the applicant whether he ever passed a gall-stone or kidney stone, or had any symptoms due to them. Instead of "venereal disease," say "disease of the private organs" or some similar expression. Functional disturbance of the heart is better translated "palpitation or any nervous trouble with the heart." In other words, in asking these questions, you will have to get down to the medical level of the applicant to whom you are talking, and you must not leave a question until you are sure he understands its full purport. Explain it over and over again to him if necessary. In doing this a certain amount of tact is important. A little expression of sympathy and an apparent appreciation of what he says will prove of more value than sharp cross-questioning. It is an old saying that "molasses catches more flies than vinegar," and you can often get information from a man by an appearance of friendly interest. Having opened up a subject, continue it relentlessly but pleasantly until you have extracted all the facts bearing upon the case; then if you think it is of sufficient importance, note it in the report. It is well to wait until you have heard all the facts before recording any of them. If it is a matter of no importance, it is a pity to put it in the record, for the fewer explanations there are in the examination blank, the better it is for everybody concerned. It is no light matter to read long-winded explanations of insignificant trifles in badly written examination reports many times a day; it adds greatly to the work at the home office, and does not enhance the repute of a medical examiner. It is the wish at the home office to have the facts boiled down to as great a degree as possible. Here for example is a concrete answer which contains all the information necessary, and although you may be several minutes in getting this information all you need do is to record these items: "Acute articular rheumatism; only two attacks, first in 1888, second in 1896, first attack mild, second severe, no complications in either case; no symptoms since." It may take you several minutes to get this information including the dates, but that boiled-down history is all that is necessary to record in the examination. You can easily see how an examiner might spread that history over a page or two of a letter without giving any additional information. You can also see that if the examiner omits almost any word in this description, he makes it incomplete, thus necessitating additional correspondence. This causes delay and may lose the agent the opportunity of placing the policy. Therefore, record everything that is necessary or essential, and do it in the fewest words possible.

Besides these specific questions, about individual diseases, the examination blank usually includes some general question like this:

"*What are the full particulars of any other illness or injury you have had, giving date, duration, and remaining effects, if any.*"

Doubtless the reference in this question to any other illness seems superfluous to some of you considering the long list of diseases which you have just been through. A moment's reflection, however, will show you that there are a number of other diseases which are not included in the list already discussed. Almost all the acute infectious diseases, such as tetanus, measles, etc., are omitted, and many other diseases, such as arthritis deformans. If the applicant has had the acute exanthemata in childhood, it is not worth while to record them unless they had some sequel; otherwise, it is safe to record anything that the applicant mentions under this head, for he would not be apt to speak of it unless it had been so severe as to make a deep impression upon him. Under the head of *injuries* it is of no consequence to record the trivial ones, such as bruises, sprains, and slight cuts, for which the applicant may have seen a doctor once or twice, unless these are very recent. All fractures and dislocations should be carefully noted with a statement as to the seat of the injury, the date, the duration, and the presence or absence of any deformity. Considerable information is desired in case of injuries to the head, and here should be noted whether there was need for any operation; whether there were symptoms of compression or concussion, especially unconsciousness; the duration of all symptoms; the mental condition following the injury and the way in which the accident happened. Of course, all these facts are not as important if the injury happened ten or fifteen years ago as if it occurred two or three years ago, but it is well to be exact. In the class of injuries due to gunshot and stab wounds, you should give full and careful statements as to the origin. A life-insurance company wants no desperado or would-be suicide on its books. You must therefore be careful to state whether an injury of this class was entirely accidental, or whether there is any suspicion of its having been wilfully self-inflicted. If intentionally done by another, state whether the applicant was entirely blameless or could be considered in any way the aggressor.

A question is always found in the examination blank which calls for the name of the *physician last consulted*, the date and cause of consultation. This is sometimes amplified so as to call for every consultation within a certain number of years. The date of the consultation should be given as exactly as possible, even if it was ten years ago, for when discussing hæmoptysis, it was shown that the influence of this is felt for at least ten years in the mortality records and the same is true of other conditions. Within five years, if possible, and certainly within two years, the month as well as the year should always be given. It makes no difference how trivial the illness for which the applicant consulted a physician; it should be faithfully recorded in every case. The duration of the complaint should be carefully noted, and the date of what the applicant calls "complete recovery." Another important point to note if the illness is a recent one and serious, such as pneumonia or typhoid, is whether the applicant has regained his normal weight. If he has not, it is a fair assumption that though he may have recovered from the illness itself, he is still suffering from the physical disability produced by it.

Are you now in good health so far as you know or believe? Every applicant for life insurance firmly believes in his present good health. It is a very suspicious circumstance if he makes any qualifications in regard to this; such statements should be very carefully investigated and in nearly all cases recorded. We do not ask for perfect health. Many who reach an insurable age and are insurable would have to answer that their health was not absolutely perfect. Good health is all that is expected, but the optimism of most applicants for insurance makes any qualifications of that phrase "good health" a matter which needs close attention.

A question is found in most blanks in reference to *pensions*, and it will be discussed here owing to its bearing upon the past history of disease in the applicant. Its usual form is: "Do you draw a pension?" or, "Have you ever applied for a pension?" You must set forth the date and the exact disability for which it was granted or applied for. These cases should be investigated and examined with great care. Doubtless some of them are fit for insurance, but the impropriety, to say the least, of drawing a pension and applying for insurance at the same time is manifest.

In countries where military conscription is in force, a similar question is often asked, namely, "Are you exempt from military service? If so, why?" Many exemptions are due to causes which have no effect upon longevity, such as being the only son, the loss of a finger, errors of refraction, etc., but in other cases the same moral objections apply as to pensioners

SECTION VI

EXAMINATION OF WOMEN

THE examination of women presents some peculiar features, and there has been a prejudice against their insurance until recent years. If they are offered the same terms as men, they must expect the same thorough examination and investigation into their past history. You should take nothing for granted, and you should allow no false modesty to prevent your asking a woman any question which has a bearing on the risk. While asking the questions you must adhere strictly to the rule which requires that no third party, not even the husband, be present. This does not apply to the physical examination, for many women will refuse to be examined unless some one besides the doctor is in the room; and it is also a protection for him to have some one present at this time.

The list of the diseases in the examination blank usually includes the following: *Menstrual disorder, disease of the uterus or its appendages, disease or tumor of the breast.* Many women have slight discomfort for the first day or two of the menstrual period, but unless this is severe or requires treatment, it need not be mentioned. Other varieties of menstrual disturbance, indicating possible organic changes, should be described in full. If any symptoms of disease of the uterus or its appendages be acknowledged by the applicant, they should receive full notice; likewise any disease or tumor of the breast.

The number of children born and the date of the last birth, or in some examination blanks the date of each birth, should be recorded. It is well to ask the applicant if she has had any *miscarriages* instead of using the term abortions, for some people think that the latter term is applied only to induced labors. If she acknowledges having had *abortions*, state the number, the date and cause of each, whether it has been induced, or not, and whether there have been healthy children born subsequent to the last abortion. The date of marriage should be given, and if there has been more than one marriage, the date of each should be mentioned. The applicant should state whether she is now pregnant; if she says she has passed the climacteric, the date of the last menstruation should be noted. It is well to compare the date of marriage and the date of the climacteric with the stated age of the applicant, for it is a feminine weakness to remove a few years from those which have been given them. You may thereby stop petty fraud upon the company. Marriage at the age of twelve for instance, in this country, is not at all likely.

If the blank contains the question: "Are you engaged to be married within the next two years?" it can be answered categorically "Yes" or "No." This may seem like intruding into private affairs, but the comparatively high mortality among women, especially in the first pregnancy, calls for great care in the selection of these risks.

Some examiners have a modesty which prevents their putting all of these questions to an unmarried woman, and in this country any question concerning pregnancy is usually superfluous. There are, however, enough exceptions to this rule to warrant each of these questions being put in every case; nor should any woman need blush at them if a proper explanation is made by the examiner. Before asking these questions, say to her: "Now, some of these questions are unnecessary, but the company expects me to put an answer to each of them. Will you kindly answer them as I go over them rapidly?" Then ask each of the questions relating to child-bearing, putting them something like this: "You have never had any children or miscarriages; never been married, and you are not now pregnant?" Or you can let the woman read over this part of the blank and state the troubles from which she has suffered, assuring her that the other questions will be answered in the negative.

When making an examination of the chest of a woman, she must be instructed to remove her corsets and any outward apparel which would interfere with the examination. The chest measurement should be taken immediately below the axilla, the abdominal measurements at the waist-line. If the abdomen be large below this point, you should ascertain whether it is merely adipose and pendulous, or whether there is a possibility of a tumor, or pregnancy. The urine should be passed at the time of the examination. If this is not possible, you should obtain it later yourself, but you should not allow it to be sent to you in any case.

SECTION VII

FAMILY RECORD

WHEN you come to take the family history of an applicant, you are confronted with a great difficulty at the outset, the lack of accurate knowledge on many points that are essential. For instance, very few can give the full names of their four grandparents. Ignorance on a point considered by most people so important as this indicates greater lack of knowledge about the duration of their lives and the cause of their deaths. You have to pierce through this haze of misinformation and imperfect knowledge as best you can. Fortunately, as a rule, the applicant for life insurance gives the most favorable presentation that he knows or does not know. He sometimes states that his parents died of "natural causes," or better still, of "nothing serious." Of course, he means to imply that the cause of death was not one of those diseases which are usually regarded as hereditary. It follows naturally that the worst possible interpretation is put on all equivocal answers in the family history. This feeling of distrust is justified by certain facts. Thus, Manley investigated certain cases in which there was a family history of consumption. To offset this family history, policies were issued only when such applicants were physically above the standard. In spite of this superior physique, the mortality proved to be above the average. Where only the mother was consumptive the actual mortality was twenty-five per cent. in excess. But now note this: Where the father did not die of consumption and the mother's death was ascribed to childbirth, the actual mortality was twenty-eight per cent. in excess of the expected. In other words, the death of the mother from childbirth had as unfavorable an influence upon the longevity of her offspring as her death from consumption. The most plausible and the most probable explanation of this is that these applicants made a mistake when they stated the cause of their mother's death (which really was complicated with consumption). The idea of consumption is so dreaded, by the laity especially, that a case of it in the family is forgotten as soon as possible, or some fable about it is gradually invented, amplified, and polished, until finally it passes as the truth.

On the other hand, the present tendency is to give less credit to hereditary influences in the development of certain diseases. Tuberculosis is now recognized to be a germ disease and distinctly contagious. If the dose of the tuberculous poison is sufficiently large, any man will die from it, no matter how great his strength and vitality. If the husband develops consumption, and the wife, in her tender loving care becomes infected by him and both die of it, surely it is not right to credit the children of these with a double inheritance of this disease. The inability to resist such a destructive process is the only part that is inherited, and this can largely be determined by itself from the physical examination and the previous personal history of the individual. Necessarily much precaution must be taken in selecting such cases, and only those which are distinctly above the average in both these respects should be admitted to life insurance on terms of equality with others. The possibility of any present family contagion should be carefully guarded against. For this reason a person living with a tuberculous relative is in much greater danger than one who has lost several relatives eight or ten years previously.

A strong, although as yet unsuccessful effort is making to prove that cancer is also caused by a parasite. At any rate, the trend of professional opinion questions the hereditary transmission which was once ascribed to it. Here the ignorance of the laity works to their detriment, for any fatal tumor is apt to be called by them a cancer. In connection with the subject of cancer, Dr. E. J. Marsh says:

"There has been considerable discussion in the medical journals and societies regarding the progressive increase of cancer during the past fifty years. Nearly all mortality statistics agree in showing a steady increase in the number of deaths recorded from this disease, but there is diversity of opinion in the interpretation of these records. Whether they represent a corresponding increase of the disease, or only a greater accuracy of diagnosis and carefulness of record, it is certainly true that a part of the increase in numbers is due to progress in the recording of vital statistics, and it is probable that another part is due to advance in medical knowledge and more accurate diagnosis of internal disease. With due allowance for these sources of error, there is a residue which the majority of medical writers believe to represent an actual increase in the frequency of cancer."

The record of the family is usually divided into two main columns for the living and the dead. Do not get them mixed up and put the dead in the living column as is sometimes done by a careless man. Under the head of living you should record the age as nearly as can be estimated and the state of health. If this is anything else than good, you must state distinctly the cause of the impairment. To say that some one has fair health or poor health without also stating the cause simply leads to correspondence and delay. Be sure to include half-brothers and half-sisters whether living or dead, and state definitely their relationship to the applicant. In the column assigned to the dead, you should state the age as nearly as possible; in the case of the grandparents this is frequently a difficult matter. You may have to use the expression "old" or "very old," although it is better to state "over sixty" or "over seventy" if the applicant is reasonably sure of this fact. The specific cause of death must be given in each case, and all general terms such as "Don't know," "Natural causes," "Debility," "Childbirth," etc., should be absolutely excluded. If the applicant states that childbirth was the cause of death, try to obtain some particulars as to whether it was puerperal hemorrhage, puerperal fever, eclampsia, etc. In each case give the duration of the final illness and also the health previous to that illness. All of these points are of great importance, and an omission or half answer frequently leads to tedious correspondence and delay. If the specific cause of death is said to be of pulmonary origin, try to ascertain if there was any suspicion of tuberculosis; if it is said to be an accident, state the nature of the injury as well as the duration and the previous health.

SECTION VIII

HABITS

By this term we refer to the use of alcoholics and drugs. This is one of the most important items in the selection of risks, and there is no one feature which has a greater bearing upon mortality. Certainly there is none about which there is greater suppression and distortion of the truth.

The classification of men with reference to their use of alcoholic beverages can be extended almost to infinity. We are hardly able even to separate the sheep from the goats, for we cannot determine what is the physiological amount of alcohol which the human system can consume without physical injury. After all, the question is largely a personal one, and what one man might dispose of with comparative ease would be preposterous for another. Anstie fixed the physiological amount of alcohol at one and one half to two ounces of absolute alcohol per diem. This represents approximately three or four ounces of whiskey or brandy; that is to say, three or four fair-sized drinks a day. Now, the average man in England may be able to consume this quantity without any harm, but the amount is rather large for a steady daily ration in America. While some take their quota of alcohol daily, another class of cases save up their drinks for three or four sprees a year, although they are entirely sober, perhaps even abstemious, in the intervals. In any case, it is your business to record faithfully what the applicant tells you about his habits, past or present. In getting this information it is well to assume an air of pleasantry, perhaps even becoming mildly jocose, for few men will relate their alcoholic pecadillos to a harsh confessor.

The question is usually divided into several parts on the examination blank, each of which must be answered concisely and carefully. You must inquire into the past habits as well as the present, and avoid such indefinite statements as "occasional," "usually temperate." You should not fail to ask the applicant: "Have you always been temperate." Now, by that we do not mean that a young man *may* have become oblivious for some short hours on a few rare occasions of his life. A large percentage of men above thirty years of age would have to confess some indiscretion of this kind, even though they could not be accused in any sense of sowing wild oats. To note such a trivial matter as this will simply complicate matters at the home office.

This is not the place to discuss the question of prohibition. It might be well for a man to drink even at the risk of shortening his life if he thereby made the world richer in knowledge and enjoyment. There was no time when men drank harder than in the Elizabethan age, and when one considers the amount of work that was accomplished and the benefit that accrued to mankind in that period, the plea for the use of alcohol even if it does shorten life must have a certain weight. But with these considerations you, as life-insurance examiners, have nothing to do. That the intemperate use of alcohol does have an influence upon mortality is well shown in the following table on page 94. This was constructed by Neison in 1852, and shows the difference in expectation of life between the general population at that time and a number of individuals who were distinctly

EQUATION OF LIFE, BEING THE PERIOD OF YEARS OF WHICH THERE IS AN EQUAL CHANCE OF LIVING AMONG THE

Age.	General.	Intemperate.
20	44.2	15.5
30	36.5	13.8
40	28.8	11.6
50	21.2	10.8
60	14.3	8.9[1]

intemperate. You will see that at age twenty the expectation of the intemperate is one third that of the general. As the age advances, this disparity grows less until at age sixty their expectation is nearly two thirds. Those who survive the earlier years of intemperance seem to have a toughness of constitution which counterbalances their excesses to some extent, though not wholly. These elderly topers are sometimes emulated by younger men, who are possessed with the idea that they can do likewise with impunity, but who fail to realize that the pathway of these exceptional cases is strewn with the tombstones of their comrades who started with them in the alcoholic contest.

The influence of total abstinence upon longevity is much more debatable. Many total abstainers are so by necessity. They have a constitution which does not permit the use of the smallest amount of alcohol without feeling it, or else they have a neurotic tendency which impels them to drink to excess, if at all. The influence of this class is well shown in the investigation of the British Medical Society. Their committee found that the average age at death of total abstainers was only fifty-one years, nearly one year less than that of the distinctly intemperate. On the other hand this table shows a different result:

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[1] *Contributions to Vital Statistics*, by F. G. P. Neison, *p. 217.*

HEALTHY MALES. EXCLUDING FIRST FIVE YEARS OF ASSURANCE.

Ages.	Abstainer.	Non-Abstainer.	Om (5).
15–19	.641	.436	.638
20–24	.458	1.001	.665
25–29	.544	.935	.709
30–34	.458	.886	.777
35–39	.479	.909	.886
40–44	.581	1.042	1.056
45–49	.784	1.402	1.320
50–54	1.064	1.754	1.731
55–59	1.682	2.425	2.375
60–64	2 571	3.378	3.373
65–69	4.262	5.108	4.918
70–74	6.260	7.250	7.290
75–79	11.652	10.635	10.885
80–84	15.327	16.334	16 240
85–89	20.497	21.910	24 001
90–94	25.455	32.653	34 788

This is based upon the mortality of the United Kingdom Temperance and General Provident Institution from 1841 to 1901. In this Association they have two sections, one non-abstainer and one composed of total abstainers. The table covers a period of sixty years and their selection of risks has been good as shown by the mortality of the non-abstainer section. The total abstinence section, however, shows much better results, as seen in the table. Each column shows the rate of mortality per cent. per annum, the first five years of assurance being excluded in order to eliminate the uncertain factors which occur in those years. The third column is taken from the British Officers' Life Tables of 1893 and is the standard actuarial table of British experience. The two sections, abstainers and non-abstainers, are drawn from the same class of society, and the comparison, therefore, is between persons who are under similar circumstances and conditions, except as regards the use of alcoholic beverages. Those in the abstinence section are required each year to sign an agreement to remain total abstainers for the succeeding year. *Those in* the general section are carefully selected and all intemperate persons are excluded.

It is sometimes asked whether the kind of alcoholic drink that is used makes any difference. It is a popular fallacy that beer is less harmful than wine or liquors, for this is not so. The idea, among Germans especially, that beer drinking is comparatively harmless is not borne out by the statistics of their own life-insurance companies, for their mortality considerably exceeds that of the American and English companies. In this connection we wish to quote from an article by Mr. Emory McClintock:

"Yet the difference between those who drink beer and those who drink water is unmistakable, while the loss on beer drinkers has been almost the same as upon wine and spirit drinkers. Among wine and spirit drinkers a large part of the extra loss is upon actual drunkards, while the remainder must be ascribed to the injurious effects upon the constitution of supposedly moderate though really immoderate indulgence. Among beer drinkers pretty much the whole of the extra loss, it would seem, must be attributed to constitutional effects.

It is the danger of falling into the habit of intoxication that makes spirit drinking the more formidable of the two; while undoubtedly the habit of drinking either beer or wine, or spirits, beyond a certain medical limit, not well defined, because it cannot be the same for all constitutions, and usually exceeded by those who drink at all, tends in many cases towards disease. Finally, it may be questioned very seriously, whether the physicians should not fix their limit of safety for any individual at a lower point for beer, measuring by alcoholic contents, than for spirits; that is to say, whether there is not an injurious element in beer apart from the alcohol which it contains.

"There is no reason to distrust the general results of this investigation. It coincides with all previous reasonable belief and expectation. It does not show that those who drink only occasionally and not to intoxication, or those who drink habitually but lightly, are in any way injured. It does not show that all of those who drink heavily must therefore necessarily die prematurely. It does show, however, that there is enough injury done to a *sufficient* number of individuals to make the death loss distinctly higher on the average. Again, it is admitted that death losses in excess among drinkers are not necessarily due always to drink. The coincidence between excessive drinking and lower vitality may be partly due to bad risks taking to drink, as well as to good risks becoming bad because of drink. On the whole, however, the teetotal habit, not only before, but after middle age, must be counted as a favorable indication in judging of proposals for insurance from persons not known to be careful and moderate in the use of beverages.''

Before leaving the subject we wish to impress upon you the necessity of giving the company full information concerning the habits of an applicant if your knowledge of them is at variance with his own statements. These latter, of course, you have to record in the examination, but if you have any reason to believe that his statements are not strictly true, it is your business as the trusted representative of the company to send a confidential statement to the home office giving all the facts in your possession. We cannot urge too strongly the imperative need for this. It is a matter of the greatest importance to the company and one for which they rigidly hold you responsible. If they find out subsequently that you have not told them all the facts bearing upon this subject that were in your possession, you will probably retire from any further connection with that company.

If the applicant has taken any special cure for the alcoholic habit, you must note carefully the date, the duration of the treatment, and especially his habits since that time. A large percentage of these cases relapse, and therefore more stress is laid upon his habits subsequent to the so called cure than in ordinary cases. It is hardly necessary to say that in such cases your physical examination with reference to the heart, blood-vessels, and the urine must be very thorough.

Many of the remarks just made will apply equally well to the part of this topic which refers to drug addictions. These cases seem to be multiplying considerably in this country, and you must be very careful in giving all the facts concerning them. If a person has really become the victim of a drug, a permanent cure *is a rarity.* We therefore look with disfavor upon any case which acknowledges having used some narcotic drug, and you must bear in mind that nearly all drug habitués are confirmed liars, especially with regard to their private weakness.

It is a curious fact, showing the desire of human nature for some paratriptic that drug habitués have increased more rapidly in localities where prohibition of alcoholic drinks is enforced. Dr. A. P. Grinnell, of Burlington, Vt., says: "In the State of Vermont they sell every month 3,300,000 doses of opium, besides what they dispense in patent medicines, and besides what the doctors dispense. This gives one and one-half doses of opium to every man and woman in the State of Vermont above the age of twenty-one years, every day in the year. By dose, I mean one grain of opium, one-eighth grain of morphine, one-half ounce of paregoric, or twenty drops of laudanum."

SECTION IX

RESIDENCE

A LIFE insurance company permits the soliciting of risks at standard rates only in localities which are regarded as affording a fair chance for the inhabitants to live out a normal life expectancy. In other places, either it does not permit the insurance of risks at all, or it charges an extra premium to cover the increased mortality. This extra risk, or, as it may be called, residence hazard, may be due to several factors:

1. The uncivilized condition of the country may cause an amount of lawlessness and crime which prohibits satisfactory life-underwriting. Persons who would naturally take insurance in such countries would probably be the very ones who would undergo the greatest risk. It is almost impossible to measure this risk, and hence such regions as Manchuria, Central Africa, and Polynesia are practically uncovered by life insurance at present. This uncivilized

area is constantly diminishing and every year sees new territory added to the possibility of life insurance.

2. The nature of the country may be so unsanitary and the inhabitants so lacking in hygienic knowledge that they are subject to endemics and epidemics of a severe type. This is particularly true of tropical countries and in many of them life insurance is practically prohibited. This element of risk can be measured with more accuracy, however, than the preceding, and extra premium rates can be arranged in some cases to cover the increased mortality. Under these circumstances, insurance can be written without loss.

3. The inclemency of the climate may be so severe that the mortality is materially increased. While this is one of the factors which renders tropical countries unsafe, it is particularly applicable to the arctic and subarctic regions. Here the winter is so long and so rigorous that the health is affected. On the other hand the material comforts of civilization tend to correct this, and as these regions become developed and more thickly populated, this element of risk grows less.

As examiners you do not have to consider these matters, for an agent is permitted to solicit risks only in territory which has been approved by the home office. For that reason you are apt to pay but little attention to the sanitary surroundings of an applicant, and thereby overlook information which may be of much value, and which you should report. If his residence, either by reason of its location, or on account of squalor, filth, or overcrowding, is distinctly unsanitary, you should report these facts confidentially to the home office. They do not want such risks, and your report may be the means of preventing a contemplated fraud, or at least inferior business.

Many companies require you to state whether the applicant is acclimated. This question applies particularly to regions in which malaria and yellow fever are found. One attack of the latter secures immunity, and a person who has been exposed to an epidemic or who has lived for some time in a locality where yellow fever is endemic is also considered immune. On the other hand, an attack of malaria indicates susceptibility, and it requires a residence of a year or more in a malarious country to determine if the individual is properly acclimated. Of course, our knowledge of the transmission of malaria and yellow fever by means of mosquitoes has modified these old views, but there is a sound substratum of truth in them yet.

Most companies require an applicant to state how long he has lived in his present residence. If he has changed his residence, you must ascertain the reasons for this, and especially if it was on account of his health. The treatment of tuberculosis by transference to a high dry climate is so common that in some parts of the country a large proportion of the inhabitants are there on account of some such condition or because they feared the possibility of its development. These cases often do well while they remain in such a climate, but a return to a less favorable locality frequently causes an exacerbation of the latent trouble, which has not really been cured.

Most companies require an applicant to state whether he contemplates a change of residence. If a man living in a healthy locality finds out that the demands of his business necessitate his going to some unhealthy place, he is very apt to provide against possible mishaps by taking out some life insurance. This is evidently unfair to those policy-holders who continue to reside in healthy regions, unless he pays an extra premium to cover the increased risk. For this reason the question is asked and must be answered with care.

SECTION X

OCCUPATION

THE accompanying table gives the mortality in different occupations and the causes of death in each. It is based upon the English death registers for the years 1890, 1891, and 1892, and the numbers living at the census of 1891. The comparative deaths are those that would occur annually in each industry out of 61,215 males in that industry from twenty-five to sixty-five years of age, divided as follows:

22,586 in the age-group 25-35 years
17,418 " " " " 35-45 "
12,885 " " " " 45-55 "
8,326 " " " " 55-65 "

That number of males in the general population similarly divided would produce one thousand deaths per annum. The numbers under the individual diseases are not percentages, but when added together for any one occupation will equal the total comparative mortality for that occupation.

Occupations 1-4 are the learned professions, so-called. They are all good, the clergy being by far the best. The physician is last and distinctly inferior to the others, in spite of his knowledge of hygiene. Perhaps it is easier to lay down rules of health for others to follow than to apply them personally. Besides this there are great demands made upon his strength during epidemics and also constant exposure to contagious diseases. This fact is well brought out by his mortality from influenza, which is fifty-one instead of thirty-three among occupied males. Another factor is the liability which he has of developing some form of drug-addiction, or an undue use of alcohol. Under the stress of work and worry to which a physician is frequently subjected, the temptation to deaden the feeling of fatigue and pain by a resort to some drug is very great, and the opportunity of course is always present. The immediate effect may be a relief, but when the habit has once been acquired, the results become serious, both mentally and physically. The effect of drug-addictions cannot be esti-

Occ	Bright's Disease.	Other Diseases of Urinary System.	Plumbism.	Accident.	Suicide.	All other Causes.	Reference Number.
......	28	16	1	56	15	66	
males.	27	14	1	56	14	66	
n......	27	12	—	9	7	43	1
......	38	10	—	22	18	64	2
ster...	25	8	—	8	15	44	3
......	56	23	—	37	4	77	4
n......	18	10	—	148	12	69	5
......	18	11	—	30	14	43	6
rer...	12	9	0	42	8	52	7
borer	19	10	—	141	10	69	8
borer	30	19	0	73	13	86	9
indoo	28	14	—	25	25	43	10
, cabn	33	21	—	62	20	70	11
ngine	21	13	—	79	3	47	12
nerch	35	22	—	202	14	121	13
......	55	23	—	50	17	71	14
, spir	62	28	0	46	32	82	15
serva	50	27	—	51	25	98	16
......	26	14	—	16	12	46	17
......	38	18	2	34	31	66	18
hopke	39	7	—	28	17	56	19
fectio	31	18	—	25	19	64	20
......	30	16	0	22	15	64	21
......	35	13	—	39	23	73	22
, joine	23	11	0	39	12	53	23
, mas	25	12	0	54	10	63	24
ainte	63	21	19	52	16	62	25
h.....	27	13	0	33	13	60	26
ker....	85	76	211	45	13	98	27
r......	82	22	75	39	31	149	28
ufactu	42	21	12	59	17	65	29
rthenw	45	18	17	20	16	69	30
r......	18	12	0	141	9	65	31
ner...	68	—	—	35	—	128	32
r	33	8	5	43	5	101	33
e qual	17	12	—	120	11	80	34
weep	39	20	—	50	31	83	35

mated, but the influence of alcohol is clearly shown in the increased deaths from alcoholism and also from diseases of the liver which amount to sixty, instead of twenty-seven among occupied males. Lawyers, too, seem to have a similar weakness, for their deaths from diseases of the liver amount to fifty-five.

Occupations 5–7 involve a marked degree of exposure to all sorts of weather. In spite of this the mortality in all three classes is extremely good, though a little higher among fishermen on account of heart-disease and accidents.

Occupations 7–9 represent different classes of unskilled day-laborers. The farm laborer is good and decidedly the best of the three. The railway laborer is worse and considerably below the standard of occupied males, owing chiefly to bronchitis, pneumonia, and accidents. The general laborer, outside of the agricultural districts, is decidedly an inferior specimen. This is probably due to deficient nourishment, bad sanitation, and excessive physical labor. These factors are shown in his mortality from phthisis, diseases of the respiratory and the circulatory system. Alcohol is no cause of his increased mortality, for deaths from alcoholism are not increased and those from diseases of the liver are below the standard.

Occupations 10 and 11 show the contrast between indoor-service and out-door service. The difference is mainly due to phthisis and diseases of the respiratory organs.

Occupation 12, railway engineers and firemen, shows very good results, and is a great contrast to occupation 13, seamen, which is almost uniformly bad, accidents being the worst.

Occupations 14–16 show the severe influence of the liquor traffic on mortality. They are all very bad. The direct effect of the alcohol is well shown by the great mortality from alcoholism and diseases of the liver.

Occupations 17–19 are examples of the shop-keeping class. None of them are bad, though the grocer is decidedly the best.

Occupations 20–22 are examples of the different trades. The only one where the mortality is in excess is among the butchers, and this excess can be accounted for largely by the deaths from alcoholism and diseases of the liver.

Occupations 23–25 represent different classes of artisans. Carpenters are distinctly healthy. Bricklayers and masons are below the average in regard to phthisis and diseases of the respiratory organs. Among plumbers, painters, and glaziers, the influence of lead-poisoning is very great as is shown by the mortality from plumbism, Bright's disease, and diseases of the nervous system.

Occupations 26–28 represent different classes of metal workers. Blacksmiths are quite healthy and are in a sharp contrast with the other two classes. Both lead-workers and file-makers show the severe effect of chronic lead-poisoning by the great number of deaths from plumbism, Bright's disease, and diseases of the nervous system. File-makers also show the effect of the metallic dust in the air by the enormous amount of phthisis, bronchitis, and pneumonia.

Occupations 29 and 30 are both bad, partly due to chronic lead-poisoning, but chiefly to the great number of diseases of the respiratory organs, including phthisis.

Occupations 31–34 represent different classes of miners; coal-miners are quite healthy, and would be still better if it were not for the deaths from accidents which are very high. Contrary to popular belief, the influence of coal-dust in their atmosphere must be very slight, for deaths from phthisis, bronchitis, and pneumonia amount only to 333 in this class as contrasted with 378 among occupied males. The other classes of miners have a high mortality, chiefly due to diseases of the respiratory system, including phthisis. Among copper-miners cancer is also very prominent, while stone- and slate-quarriers have a high mortality from accidents.

Occupation 35 is introduced chiefly to show the enormous mortality from cancer, which is more than three times as large as that of all males.

You see from this table that some occupations are very unfit for life insurance. At least, they should not be classed with the average risk. This occupation hazard can be subdivided under four heads:

First, the risk from the increased liability to accident. Under this head you can classify many of the iron- and tin-workers, coal-miners, railway laborers, engineers and firemen, workers in electricity, fishermen, seamen, sawmill operators, etc. On the other hand, in some classes which you might think would be hazardous on this account, the increased risk is counterbalanced by the superior physique of the individuals. Fishermen, for instance, do not constitute an extra hazardous class for life insurance, for though the risk from accident is greater than the average, their superior physical condition is such as to entitle them to be considered an average risk.

Second. Many of these occupations are hazardous on account of the diseases which they may occasion. Stone-cutters, copper- and lead-miners, file-makers, brass- and copper-workers, potters, and glass-makers, chimney-sweeps, plumbers, and painters, are all liable to diseases incidental to the business. In these cases there is as a rule no redeeming feature of superior physique to make up for the increased risk.

Third. The abuse of alcoholics is a very potent factor in many of these occupations. All people who handle alcoholics by retail are profoundly affected by the nature of the occupation. With few exceptions they drink, and usually more rather than less. Moreover, they consume a great and constant quantity of alcohol by absorption in handling it and in breathing it. As a class, they regularly take in so much alcohol as to shorten materially their lives. There is no one factor which has a greater influence in increasing mortality than the abuse of alcoholic beverages. All companies exclude people of this class at their regular rates.

Fourth. The increased risk from exposure is a factor in raising the mortality in some of these classes, but alone it cannot be a very large or important factor. The average farmer or fisherman exposes himself to the weather very considerably, and yet you see he ranks very low in point of mortality. When to exposure is added any excess of alcoholics you have a combination which makes for diminished longevity at a rapid rate, but the alcohol is a much more serious item than the exposure.

In many occupations the mortality is constantly improving. A factor in this is the general improvement in sanitation which the whole civilized world is undergoing. Better wages and more regular work help in the same direction. In some cases it seems to be due also to the increased intelligence of the workmen. For instance, chronic plumbism is much less common now among painters than formerly, for they appreciate the risk they run and that it can be avoided by scrupulous cleanliness. Changes in methods, whereby machinery does part of the work that hands used to do, account for the improvement among steel- and iron-workers. In other cases, legislative enactments compel more sanitary methods, as the use of the air-brake on railroad trains.

Each company will instruct you that certain occupations are extra hazardous and that you are not to examine people who pursue them. It is your duty to note whether the occupation stated by the applicant agrees with the facts as you know them. An applicant will try very often to conceal the fact that he is engaged in handling alcoholics, and it becomes your duty to notify the company if he is misrepresenting the facts. He may be a saloon-keeper, who also acts as a real-estate broker. Do not be content with his stating that he is a real-estate broker only, but if you know him to be engaged in the retail liquor business in any way report the circumstance to the company at once. Look over the list of occupations which the company regards as extra hazardous and memorize them in a general way.

All companies require some statement as to the former occupations of an applicant. This is very important, for the present farmer may easily revert to the saloon-keeper or miner which he was last year. Some companies ask a number of questions in regard to the present and former occupations and you must answer them with care. If the applicant makes a statement which you know to be inaccurate, you should correct it in a confidential letter to the home office.

SECTION XI

MISCELLANEOUS

UNDER this head are included a number of topics which cannot be classified with any of the preceding sections.

1. *Age.*—This question is sometimes put, "Age at nearest birthday," or "Age at last birthday." When you have ascertained the stated age from the applicant, it is well to make a mental note as to whether it corresponds with the apparent age, and most blanks have a question calling for this. No applicant for life insurance ever overstates his age, but quite frequently it is understated. Of course, a difference of two or three years cannot be detected, but an apparent difference of several years can be observed, and must be noted. Apparent age also reveals in many instances a degree of vitality or health important to know. If an applicant appears to be much older than he really is, the condition is very apt to

indicate deeper-seated changes which have a material bearing upon the risk. The adage, "A woman is as old as she looks, and a man as he feels," is not always a safe guide.

2. "*Are you married or single?*"—This question should be answered distinctly. Sometimes the question is answered, "Single" when the applicant really means "Widowed" or perhaps "Divorced." You can readily understand that a single woman should not have any children, and if you meet such a case, you must make further inquiries to find out whether she ever was married. In some countries an unmarried woman with children does not seem to be regarded as in a serious situation, but in this country we do not look upon her with favor for life insurance.

3. *Race.*—This refers to the five great divisions of the human race, the Caucasian, Semite, Indian, Mongol, and Negro. No minuter classification is necessary for the purpose of insurance, but it is important not to record "American," for that signifies nothing, as an American may belong to any of these races.

4. *Identification.*—You must assure yourself

of the identity of the applicant. Frequently the agent will be at the place of examination, and his introduction is usually a sufficient guarantee. In other cases you will have to question the applicant so as to make sure that he is the party represented to you as such. In all cases, it is a good plan to compare his signatures to the application proper and the examination record.

Many companies ask how long you have known the applicant. If you have just met him, say that he has been suitably introduced, or satisfactorily identified. If you have known him for some time, it is well to state how intimately you have known him. If you say that you have known him for some years, and it should turn out afterward that he was a drunkard or a gambler, the explanation that your acquaintance was only casual would be unsatisfactory.

In order to assist in identifying an applicant, either before or after death, some companies ask for the color of the hair and eyes, and others for some mark of identification. You should be very careful to answer this by locating exactly some scar, mole, nævus, or malformation. The question is apparently misunderstood by some examiners, for such answers have been given as "flat head," "florid complexion," and even "stuttering." These would prove of very little value in the identification of a cadaver.

5. *Previous Applications for Insurance.*—All blanks contain some reference to the previous insurance history of the applicant. In order to ascertain if there has been any adverse action, they usually have a question worded about as follows: "Have you ever been examined for a policy which was not issued as applied for?" This covers not merely rejection and postponement, but also those cases in which a higher premium is charged to compensate for some impairment. An examiner must not be influenced by such action, except that he will make his examination with greater care and thoroughness, especially if he can ascertain the cause assigned for the adverse decision. In the matter of personal and family history, the procedure of different companies varies so greatly that a case rejected by one company may well be accepted by another. If the adverse action was due to physical im-

pairments, you must remember that these are often temporary, and furthermore the other examiner may have made a mistake. If you think that the applicant is sound, state in your report that you have examined with particular care the organs which the former examiner found at fault. If the adverse action was due to the urine, it is well to analyze an additional specimen, obtained on another day, and report all your findings. In these cases you should also have the applicant sign a statement that he has been under no treatment or dietetic restriction for the preceding six months.

Many companies also require the Examiner to ascertain from the applicant the amount of life insurance which he carries and the companies in which it is placed; also whether he has any applications for insurance pending in other companies. These questions should be answered carefully, as they have an important bearing on the financial aspects of the case. It is manifestly improper for a twelve hundred dollar clerk to carry $40,000 or $50,000. If you have good reason to believe that the insurance is speculative, and that the applicant has not the means personally to carry it, you should report the matter confidentially to the home office.

6. *Privacy of Examination.*—A question is usually asked referring to the presence of a third party during the examination. This must be carefully avoided. An applicant, be it man or woman, is more apt to suppress detrimental facts when a third party is present than when only the applicant and the doctor are together. There may at times be a little difficulty in accomplishing this owing to the persistence of the agent or to the timidity of the applicant, but all the questions should be asked in private in such a way that no one can overhear them or the answers. Occasionally, if the room in which you are working is very large, the examination may be made in a corner in such a way that it amounts to entire privacy; even then, for your own sake, it would be well to make an explanation of the circumstances. With reference to women, there is no need of a third party being present while the questions are being asked. On the other hand, it is advisable for the sake both of the applicant and the examiner to have some one else present at *the time* of the physical examination proper.

What is sauce for the gander is sauce for the goose. Some companies charge extra rates for women and there extra privileges may be allowed. But where the same rate is charged for women as for men, the examination should be as thorough and under the same rigorous conditions as that of men.

SECTION XII

PHYSICAL EXAMINATION

WE have so far considered those parts of the examination which depend chiefly upon direct question and answer between applicant and examiner. We will now take up the physical examination proper.

Before discussing each part of this in detail, we will give a brief sketch of the order which it is best to follow in making this. You have been at your desk writing out the answers as given by the applicant who has been seated near you. When you have finished the questions, it is well to lean over to the applicant and take his pulse rate at once, even before you have him sign the record. Almost every applicant is excited by the examination, and this shows itself more quickly in the pulse than elsewhere. While answering your questions he has in a measure become quieted *down*, and now is the best time to take the pulse before he even suspects the physical examination. When you have done this, the record of the examination should then be signed by the applicant in the place indicated. If he cannot write, he should make a cross, and you should put his name by the cross with your name underneath to indicate how he signed it. Some applicants will insist upon reading over the answers before signing their names. It would be well if more did this, for then you feel reasonably sure that no mistakes have been made even though it takes a few minutes of your time. Be careful that you enter your signature as witness either at this time, or before you complete the paper.

The next step should be to take his height and weight. It is advisable for you to have a scale in your office, as this can be obtained nowadays easily with a standard of height attached. Then ask the applicant to remove his coat, vest, and outer shirt. Sometimes it will take quite a little tact to persuade the applicant to remove them, but gentleness combined with firmness will succeed in all cases. You may have to use some diplomacy, but the invariable rule should be that the outer shirt is removed before you examine the heart and lungs finally. If a man objects strenuously to removing the outer shirt, you can often mollify him by rolling it well up and making as much of an examination as possible. Then assure him that you cannot make a complete examination of the lungs until it is removed. In this way you will reach the same end by gradual steps. Having finished your examination of the chest and abdomen, you should then take the measurements of these. After this, obtain the applicant's urine, and then you have finished with him so far as his physical presence is needed. We will now take up each item of the physical examination in detail.

1. *General Appearance.*—While you are asking the applicant the questions heretofore discussed, you should notice his general appearance, whether it is indicative of vitality and a robust constitution as shown by the complexion and the character of the tissues. You should state whether he is vigorous, florid, pale, anæmic, flabby, or has in any way a sickly look. Do not use the word "fair" unless you define exactly what you mean. *Some* persons are pale without being in any

way anæmic, and for that reason if you use the word "pale" you should always indicate whether you mean that the applicant is anæmic, or not.

Occasionally you will encounter cases in which ill-health is manifestly written in the appearance. Sometimes it is difficult in these cases for you to put your finger on the organs at fault, but with care this can almost always be done. You will, however, occasionally have to reject or postpone an applicant simply on this ground. This feeling of distrust in an applicant's vitality should not be overlooked or set aside without a most rigid examination and careful consideration. There may be some latent disease of the nervous system or of the abdominal viscera, which no examination can detect without the voluntary co-operation of the applicant, and upon this you can never count.

2. *Figure.*—By this term we wish to know whether the applicant is thin, emaciated, compact, muscular, stout, obese, or deformed.

3. *Height.*—No examiner should be without a tape-measure, therefore there can be no excuse for estimating the height. This should

be actually taken in every case, preferably with the shoes on.

4. *Weight.*—This should be taken with the ordinary clothing on. Oftentimes the examination will be made in such a place that it cannot actually be obtained on a scale but must be estimated. Under these circumstances you should ask the applicant his weight, and then carefully consider whether the weight that he gives agrees with the general appearance. In one case the weight stated by the applicant was 220 pounds; on the scale it became 280 pounds. In this case the examiner was at fault, for the information which led to the accurate weight came first from a layman. When the weight is about the standard, the need of actual weighing is not so great. But in every case where the applicant nears the limit under or over the standard, a strong effort should be made actually to weigh the applicant.

The accompanying table of height and weight, varying according to age, is undoubtedly the most accurate that has ever been produced. It was prepared by the Association of Life-Insurance Medical Directors and is based upon the heights and weights of 74,211 males who were examined for life insurance. The weights were taken in ordinary clothing, and the heights with the shoes on. An allowance should be made for women of seven pounds for the first age-period, six pounds for the second, five for the third, three for the fourth, one for the fifth. After forty-five, the weights for men and women are practically the same.

TABLE OF HEIGHT AND WEIGHT AT VARYING AGES.

Ages.	15-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
5 ft. 0	120	125	128	131	133	134	134	134	131
1	122	126	129	131	134	136	136	136	134
2	124	128	131	133	136	138	138	138	137
3	127	131	134	136	139	141	141	141	140
4	131	135	138	140	143	144	145	145	144
5	134	138	141	143	146	147	149	149	148
6	138	142	145	147	150	151	153	153	153
7	142	147	150	152	155	156	158	158	158
8	146	151	154	157	160	161	163	163	163
9	150	155	159	162	165	166	167	168	168
10	154	159	164	167	170	171	172	173	174
11	159	164	169	173	175	177	177	178	180
6 ft. 0	165	170	175	179	180	183	182	183	185
1	170	177	181	185	186	189	188	189	189
2	176	184	188	192	194	196	194	194	192
3	181	190	195	200	203	204	201	198	

The companies have different limits above and below this standard. Most companies set the minimum limit as twenty per cent. below the standard, and consider that all cases outside of this should be regarded as impaired. The maximum limit is sometimes set at twenty per cent. above the standard, but this is decidedly unjust to the younger ages in whom overweight is often merely an expression of hyper-nutrition.

If the applicant is at or below the minimum, you should state whether he is active and vigorous, whether light weight is a family characteristic, and you should be particularly careful in the examination of his lungs. Young light weights are particularly undesirable from the fact that many of them already have or soon develop consumption. Furthermore, they are less resistant to the inroads of any acute disease than those of normal physique. On the other hand old light weights are not bad risks, and the jest that "they do not die but dry up and blow away" has some truth in it.

If the applicant is at or above the maximum, you should state whether he is active and muscular, long-bodied and short legged, and *whether* overweight is a family characteristic.

You should be particularly careful in your examination of the heart, vessels, and urine, for here you expect to find the early evidences of degeneration which overweight is apt to produce. The measurement of the abdomen should be taken with care, for an abdomen as large as the chest at inspiration, or larger, is always a bad sign in these cases.

Old overweights as a class are bad. The obesity is due in many cases to deficient oxidation. This may come from too much fuel, or too little draught, or defective flues. Or, to speak more professionally and less figuratively, they eat and drink too much, or they take too little exercise, or their organs are diseased and therefore unable to dispose of the food that is taken. Whatever the cause the result is the same. The tissues, vessels, and organs undergo degenerations of a fatty nature, and these cases, although they seldom die of obesity, are killed by an acute disease which a normal physique would resist, or soon develop a chronic disease of some special organ which ends their days. Young overweights are by no means so undesirable.

You should always ascertain if the weight has increased or diminished within the past year. If there has been any change, the amount of gain or loss, if more than five pounds, should be carefully noted and a full statement made as to the cause of it. If the applicant states that he has been on a diet to reduce his weight, it is a good plan always to ask him if his doctor put him on that diet on account of any trouble with his urine. This applies especially to stout people. On the other hand, loss of weight in a person already thin should make you very suspicious of pulmonary troubles unless there is some other plausible explanation. Steady gain in weight in a person already stout should always be carefully noted.

5. *Respirations.*—It is well to estimate the number of respirations at the same time that you are counting the pulse. Nothing is more easily influenced by a person's attention than the frequency of the respiration. Therefore, you cannot say to an applicant: "I am going to count your respirations"; but you must do it in such a way that he does not realize what you are doing. Of course, any marked increase in the frequency of respiration above

eighteen or twenty per minute will call for some explanation which you must give.

6. *Lungs.*—You should examine these with great care from apex to base, anteriorly, posteriorly, and laterally. You should set forth concisely and briefly any pathological condition which may be found. If none is found, you should state that the lungs are normal, or that your examination is negative. Make your statement brief and to the point, for any qualification will cause the medical director to hesitate and then distrust.

No effort is made in this book to teach physical diagnosis, except in Appendix B, where the differential diagnosis of heart murmurs is set forth. There are excellent manuals devoted to it, but after all it can only be learned from the living subject. Nowadays the opportunities for instruction of this kind are so great that a physician has no excuse if he is not thoroughly competent to discover any abnormality in an applicant's lungs. If you have not availed yourself of these opportunities, you have no business to be an examiner for life insurance.

The point for you to remember is that every abnormality does not indicate necessarily a diseased condition behind it. The physiological differences in percussion and auscultation between the two sides of the chest are so well known to you that it is not necessary for me to dwell upon them. These differences are sometimes quite exaggerated in perfectly healthy people, and they should not be mentioned in any case when you are sure the difference is a physiological one. A slight prolongation of the expiratory sound if uniform over the chest and not dependent upon emphysema should not be recorded. A few fine crackles, bi-lateral at the base, and not associated with any dullness should not be recorded. Furthermore, allowance must be made for age when you note the character of the respiratory murmur. As we grow older this becomes a little harsher, a little less vesicular; it may be increased in intensity or diminished. If these conditions are uniform in an elderly person and are not due to emphysema, they should not be noted.

We are thus particular in specifying the conditions which you should not note in order *to save you* from mortification and loss of prestige. The death rate from chronic pulmonary diseases is so large, that when a medical director sees a statement which qualifies in any way the report concerning an applicant's lungs, he is very apt to reject the application without further consideration. On the other hand many cases will undoubtedly be presented to you who are in the early stages of tuberculosis, emphysema, or some other chronic pulmonary lesion. If you get a suspicion that the applicant has any such trouble, hunt with the greatest care until you are certain of your ground and then state it without fear or favor. Bad as it is to reject a man for some trivial defect, it is a thousand times worse to recommend him and then have him die within six months or a year of tuberculosis. Your career as a life-insurance examiner is much more apt to end abruptly in the latter case than in the former. Try therefore to avoid both the Scylla of triviality and the Charybdis of carelessness when examining the chest.

7. *Pulse.*—The pulse should be counted by the watch for at least half a minute—some companies require a full minute. Its character should be carefully noted as to whether it is

soft, hard, full, bounding, small, or weak. If you find a pulse which is normal in other respects but quite small, it is well for you to observe if the radial artery is of the normal size; not infrequently a pulse is small simply because the radial at the wrist is also small. Under these circumstances take the pulse in some other location, as at the temple or the elbow, and if you there find the condition to be a normal one, you should record the latter fact and not that the radial pulse is weak. The rate should always be carefully stated; if ninety or higher, you should try it again after the examination has been finished, letting the applicant sit down for a little while and read a newspaper or book. Give him something to divert his mind from himself and the examination, and you will be surprised to see how frequently a pulse will drop from ninety to seventy odd. If the applicant is so wrought up that his pulse remains persistently high, do not turn in your report with this record until you have made a further trial at a subsequent time. It is well to make this test when the applicant is not expecting you, catching him unawares before his nervous system has had opportunity to work upon his heart. If in spite of your care and after repeated examinations the pulse still remains high, you should strive to find the cause for this abnormal condition. In a few cases it might be termed physiological, at least normal for that individual, but these cases are exceptional. A life-insurance company does not wish to consider them unless they have been under observation for many months, for we find that a pulse which is persistently high is nearly always indicative of some organic trouble; it may be tuberculosis, or chronic nephritis, arterio-sclerosis, visceral syphilis, an expression of some early change in the brain or nervous system. You should examine the thyroid gland with care, and also note whether there is any exophthalmos present, for the frequent pulse may be an early symptom of exophthalmic goitre. Often, owing to the fact that the relation which the applicant bears to you is so different from that which a patient does, you are not able to determine the exact cause.

An infrequent pulse requires similar care in examination, for it may indicate some cerebral disturbance or a beginning change in the muscular structure of the heart. With care in excluding such conditions, we find that these cases are quite satisfactory.

Note carefully if the pulse is intermittent or irregular. If it is, you should endeavor to quiet the applicant and divert his mind from the examination, for nervousness will sometimes show itself in this way rather than by an increased frequency of the pulse. If unable to get it regular, re-examine the applicant with reference to this point at a subsequent time.

If you have made several examinations and still find it necessary to record some abnormality of the pulse, you should make a note stating the number of times that you have examined it. If you fail to do this, the home office, not knowing how often you have observed the pulse, may request you to make still an additional examination, thereby inconveniencing you unnecessarily.

8. *Heart.*—The remarks which were made in the beginning of paragraph 6 will apply equally to the examination of the heart. This should be made thoroughly and carefully, the entire area should be mapped out and auscultated. If deemed advisable, you

should make the applicant exercise vigorously for a few minutes so as to bring out distinctly any murmurs. If you are convinced that any pathological condition is present, state it concisely and clearly, but do not give a tedious description of it. The home office does not care about the mental processes by which you came to the conclusion that a given condition is pathological, for it is interested only in your conclusion.

The heart is a troublesome organ to examine. If we were sure that every murmur heard in the cardiac area was pathological, matters would be greatly simplified. Unfortunately in some cases murmurs indicate nothing. In the first place it may only be a shirt murmur; therefore, if you find a murmur when listening through an undershirt be sure that you verify it by listening next to the bare skin with your stethoscope, or through a thin handkerchief only. It is surprising how loud a systolic murmur can be produced by the vigorous action of the heart against a thin chest wall when it is covered by a thick flannel shirt. Besides this condition, there are the so-called cardio-respiratory murmurs. You must always bear these in mind and carefully exclude them, for if they are solely cardio-respiratory in origin, no note should be made of them. In order to exclude them you will not infrequently be compelled to have the applicant actually hold his nose in order to keep him from unconsciously breathing while you are listening to this heart. There is another set of murmurs produced at the base by strong pressure with the stethoscope in people who have flexible chest walls; this should be carefully borne in mind and avoided. The murmurs produced in the sub-clavicular spaces, especially after exercise, are almost always of no significance.

Any endocardial or pericardial murmur must be reported and the exact character of the lesion stated. The differential diagnosis of each of the organic and functional heart-murmurs is set forth in Appendix B, page 197. If you feel any hesitancy about naming a heart-murmur, it will be well for you to consult this section. The importance of exact knowledge of a murmur and of the condition of the heart which accompanies it is very great. It is *necessary* to separate the so-called functional murmurs, which are chiefly hemic or cardio-respiratory, from the organic murmurs, but when you do so, be sure of your action. While it is an injustice to call a functional murmur organic, it is a thousand times worse to call an organic murmur functional. In the former case you can rectify your mistake in a short time, if necessary, but in the latter case, the mischief is done and an impaired risk has a policy to which his condition does not entitle him. Furthermore you must differentiate sharply between the hemic and cardio-respiratory murmurs. The former are serious inasmuch as they indicate a decided impairment of the present general health, and for that reason they must be fully set forth in your report of the case.

Alterations of the heart sounds which do not amount to murmurs require careful consideration. Roughness at the aortic valve or in the aorta, even though it does not amount to obstruction, should be carefully recorded, for such a condition is serious. Any re-duplication should be mentioned. Decided accentuation should be noted, but if you think that it is due merely to the excitement of the examination, let the applicant rest and re-examine him if necessary a few days later. Frequently these abnormal conditions will disappear when the heart is acting under the normal stimulus only, but the heart which is persistently over-acting is not desirable for life insurance. Any enlargement of the heart should be carefully recorded, but do not forget that an over-acting heart is sometimes deceptive, and you should be certain of your ground before reporting that the cardiac area is larger than normal.

9. *Arteries.*—You should always note whether there is any thickening or degeneration of the radial or temporal arteries. This point is one of great importance and you must pay particular attention to it. The condition of the radial artery can be determined while you are taking the pulse at the wrist. You should in addition feel the temporal artery as well in order to determine its condition. The mortality from chronic Bright's, cerebral apoplexy, and paralysis is very great, and these lesions are frequently associated with arteriosclerosis, which oftentimes is the only abnormality that can be discovered. Do not mistake *a full* bounding pulse for thickened vessels, nor

a high tension pulse for hardened vessels. These conditions should be recorded under the questions referring to the pulse.

10. *Liver.*—The examination of the liver, though difficult, should be made thoroughly and conscientiously and any abnormality noted. This organ is one that is often overlooked by an examiner, and greater attention should be paid to it. Its condition has an important bearing upon the general health, and any deviation from the normal requires a full explanation.

11. *Measurement of Abdomen.*—In the healthy individual with firm tissues and normal abdominal walls the umbilicus is practically at the level of the waist. In some persons the belly becomes pendulous; under these circumstances the umbilicus is very apt to fall considerably below its regular level. Therefore, in measuring the abdomen it is well first to measure at the waist line; note if the belly is pendulous, and if it is, the fact should be recorded under the head of "Remarks." If the malformation is considerable, it is well to pass a tape-line over the umbilicus and make a note of that measurement as well as the one at the waist line.

12. *Measurements of the Chest.*—The measurements of the chest should be taken at forced expiration and deep inspiration at the level of the fourth rib. Some people have a difficulty in expanding their chest when their attention is drawn to it, and you may have to show by your own action what is meant by this. It requires time and patience to teach a few of these cases just what is expected of them. The normal difference between these two measurements is usually about three inches, and you should always strive to get your applicant to expand at least two inches. In a very few cases the task is hopeless, and the best they can do for you is a half or three-quarters of an inch even though their chest and lungs are perfectly sound. In such a case you should briefly state the fact in a foot-note. Of course, in such a case you would examine the lungs with even greater care than usual, looking especially for emphysema, tuberculosis, or some disease which might account for the deficient chest expansion.

13. *Urine.*—The analysis of the urine is a very important part of the physical examination. You must be sure in all cases that the

urine you examine is that passed by the applicant. Occasionally a nervous person will find difficulty in passing the urine even under favorable circumstances. One case is recalled in which the applicant was unable to make water on seven consecutive trials, although he was given the uninterrupted use of a large urinal with the sound of running water to help him in his task. On the eighth trial, he said that he could make water if he could have a seat in a water-closet. This was arranged and the applicant disappeared into the closet with a beaker. In a few minutes he returned with a very shamefaced expression, and announced that he had succeeded in making water, but had forgotten to pass it into the beaker. The ninth trial was successful. This incident is related merely to show you that you must not become weary in a similar case.

Most applicants will refuse to pass water directly in your presence, and, under such circumstance, you must show them to a closet where they can be alone, or retire from the room yourself. Take care that no other person is present who can substitute his urine for that of the applicant. With these precautions, if the applicant hands you a bottle or beaker of urine that is perceptibly warm, your duty in this matter has ended. Never allow an applicant to send his urine to you. If you have to obtain it at a time subsequent to the regular examination, you must do it in person.

In the case of women, additional difficulties arise. The urine should never be taken while a woman is menstruating. In many cases of leucorrhœa the vulva-vaginal secretions are so considerable that they may occasion a false reaction for albumin. If you have any reason to suspect that the albuminous reaction arises from such a source, you should instruct the woman to wash the vulva, and, if possible, take a vaginal douche before passing the water.

A full description of the simple tests used in making a chemical analysis of the urine for life insurance will be found in Appendix A. The only abnormal constituents looked for are albumin and sugar. The reaction and specific gravity are also usually required. We will discuss each of these points in detail.

(*a*) *Albuminuria.*—By this term is meant a solution of serum-albumin and serum-globulin *in the* urine. No other proteids should be included. The proportion of these two substances varies in different cases, but when one is present the other is also. Therefore when we speak of albumin in the urine you should remember that we mean both serum-albumin and serum-globulin. The sources of the albumin may be quite various. Blood in the urine always carries with it some albumin and this blood may come from menstruation or from any part of the genito-urinary tract. Similarly, the presence of pus, unless in very small quantity, will cause an appreciable amount of albumin in the urine. By far the most common source is the kidneys. The quantity of albumin varies from the faintest trace shown only by the most delicate tests, to an amount equal to one or two per cent. of dry albumin. The quantity is not at all indicative of the gravity of a case. Many mild and curable cases show much albumin, while on the other hand it is well known that one form of chronic Bright's disease seldom shows more than a trace, and occasionally none at all.

The tests for albumin are many and their number increases daily. When the amount is more than a decided trace, sufficient in fact to give an immediate reaction in Heller's test, the problem is simple. But when the amount is less than this, it becomes more complicated and fraught with many chances for mistakes. Some of the tests are very delicate, indicating one part of albumin in two or even three hundred thousand. This leaves nothing to be desired on that score; but unfortunately, the agents employed in such tests are apt to react with other substances which may be present in the urine. The most common cause of error is undoubtedly nucleo-proteid. This is a proteid probably arising from cell-disintegration, and is frequently found in the urine, though usually in small quantity. Up to a few years ago, it was confounded with mucin, owing to its viscosity and some other physical properties. It is readily precipitated by nearly all organic acids. It is also precipitated to some extent from acid urine by boiling. These statements cast grave doubts upon the accuracy of most tests for albumin. Those which show marked delicacy of reaction have usually obtained this at the expense of accuracy. In fact, there is no single test which is an infallible indicator of albumin when this is present in only small amount.

We should regard all albuminuria, whether transient or permanent, as pathological. Some authorities speak of physiological albuminuria, but that is a misnomer. Albuminuria is no more physiological than a hæmic heart-murmur, or an acute bronchitis. Either of these conditions can disappear promptly and completely, leaving the individual in sound health; but while they exist no one would call him in a normal physiological condition. So with albuminuria; it may disappear entirely and permanently and never recur, but when present the condition is abnormal and pathological. If we fail to find in many of these cases any evidence of inflammation or other organic change of the kidney, we must still regard the condition as one of disease, although our knowledge of them should prevent us from making too dismal a prognosis, as was done in the days when albuminuria was synonymous with Bright's disease.

Have we any means of distinguishing the mild cases with a good prognosis from the more serious forms? There are none except the continued absence of albumin from the urine. In other words, as long as albuminuria is present we should fear the possibilities of the case developing some serious organic mischief. Do not let us forget, either, the wonders that treatment can accomplish in Bright's disease for a limited time. We frequently see cases in which albumin disappears from the urine for months under careful diet and regimen and suitable medication. On the other hand there are certain conditions, coexistent with apparent good health, which must be regarded as potential factors for the bad in cases which we may be tempted to consider functional.

1. The longer the albuminuria persists, the greater is the probability of its organic origin. If it has lasted for more than a year, the prospect of its disappearance is doubtful, but not hopeless even then.

2. A continuous albuminuria is of more serious import than one which comes and goes.

3. The presence of tube-casts is usually looked upon as indicative of an organic renal trouble. The presence of red blood cells, if it can be demonstrated that they are from the kidneys, is quite conclusive of organic changes there. Some observers claim that they can *differentiate* renal epithelial cells with certainty

from those of the bladder and ureters, but most of us cannot.

4. The persistence of a specific gravity lower than 1015 is a bad prognostic in any case of albuminuria. It is apt to indicate renal insufficiency, and these cases are much less amenable to treatment than those in which we find the specific gravity 1025 or higher. If we further demonstrate renal insufficiency by determining that the amount of urea excreted is less than normal, the indication, of course, is still more serious.

5. A hard pulse with an accentuated sound of closure of the aortic valves is distinctly prejudicial. An increased arterial tension is thus shown which may indicate the beginning of arterio-capillary fibrosis, or which may be due to the stimulation and consequent narrowing of the arterioles by blood from which the irritant excrementitious products have not been properly removed. In either case the sign is a bad one, as it points to something more than a functional disturbance.

6. Headaches must be regarded in this connection as an evil omen, if they are at all frequent, or severe.

7. The age of the patient is a point of much consequence. The younger the case, down to childhood, the more apt it is to be functional, and the better the chances of speedy and complete recovery. If the age is over forty, these prospects are much dimmed, and such cases should be regarded with suspicion.

8. Extremes of weight, both high and low, are prejudicial in albuminuria, as in most other diseased conditions. We are apt to find light weight associated with albuminuria of the young, and in many of these cases it seems to be due to the latter. On the other hand, overweight with albuminuria is apt to occur in persons over thirty, and is of graver significance than under-weight, as the same causes which have produced the obesity have probably also occasioned organic changes in the kidneys.

9. The use of alcoholics beyond the most moderate extent is unfavorable in cases of albuminuria. Certainly, if the amount taken is in the neighborhood of Anstie's limit, or if there are occasional excesses, the prospects are not good for the ultimate disappearance of the albumin.

There remains still one class of cases which must be considered. These are the cases in which the albuminuria is steadily persistent, although the individual is in apparent good health otherwise. We have all met such cases, and they are certainly very puzzling. On account of these the cry of "Physiological" albuminuria has been loudest raised, and here it is most difficult to meet. In these cases the amount of albumin is usually reported as very small, or a trace, and many of them are doubtless cases in which nucleo-proteid has been mistaken for genuine albumin. But this is not so of all, and the following ingenious hypothesis endeavors to account for them: An acute nephritis has occurred and passed away, leaving a limited portion of one or both kidneys altered. This lesion is permanent, but non-progressive. The sound portion of the kidneys is capable of doing all the excretory work necessary, and does it, while the damaged portion permits the constant transudation of albumin. This is certainly very plausible, but is unsupported by any investigations post mortem, so far as known. Even if this were true, we must regard all these cases as pathological. They are not healthy, however much they may seem to be. They may not have a progressive lesion of the kidneys, and they may not die of any functional disease of that organ; but, in our work, we must look further than this. Do they as a class live as long as they would if entirely healthy? If some one can recall cases of albuminuria which have lasted for ten or fifteen years, we must remind them that the expectation of life at thirty is thirty-six years; at forty it is twenty-nine years, and even at fifty it is twenty-two years. If pneumonia, erysipelas, typhoid fever, or any serious disease should take hold of such a case, is his chance of recovery as good as if he had been sound? But these cases of permanent albuminuria must not be confounded with those in which the albuminuria is transient. Here the prognosis is good, and as soon as the albuminuria disappears, and stays away for a reasonable length of time, we can regard such a case as healthy as if he had had simply an attack of functional dyspepsia.

(*b*) *Glycosuria.*—When we consider glycosuria, the methods by which we detect the presence of glucose in the urine must first be *determined*, for it is upon the delicacy and accuracy of our tests that the value of our clinical investigations will depend. Nearly all the tests for glucose depend upon its property of abstracting oxygen in the presence of an alkali. Among these reduction tests· so-called, are Fehling's solution, Nylander's solution, indigo-carmine, picric acid, and safranine. This reducing action is by no means peculiar to glucose among the constituents of urine. Of normal ingredients, uric acid, creatinin, and pyrocatechin possess it, the first to a slight degree only. Among the reducing bodies occasionally present in the urine may be mentioned oxybutyric acid; urochloralic acid, which is derived from chloral; glycuronic acid from camphor; turpenoglycuronic acid, from turpentine; Marshall's glycosuric acid; and Kirke's uroleucic and uroxanthic acids. Besides these, many drugs form reducing substances during excretion, such as morphine, chloroform, salicylic acid, cubebs, copaiba, glycerin, hydroquinone, and carbolic acid. Of these substances, some have a limited range of reducing power, while others affect all the tests mentioned. Although these reduction tests may be nearly faultless in point of delicacy, it is evident from what has been said that their accuracy is not great. In fact our position in reference to the tests for sugar is very much that of the old Scotchman who had seceded a number of times from various religious bodies. He explained the reasons for his various steps in great detail to a neighbor, and wound up with the remark, "and now only Sandy and myself are left who are strictly orthodox, and, to tell the truth, I have my doubts about Sandy." We have but two tests for sugar on which we can rely, the fermentation and the phenylhydrazin, and we have our doubts about the latter. The fermentation test, if properly applied, is absolutely reliable, the only difficulty about it being that it requires several hours, generally twelve, for a final answer. The phenylhydrazin test, on the other hand, will show crystals of phenylglucosazone in the course of an hour. As these two positive tests are cumbersome and take a considerable time for an answer, it is advisable to use one of the reduction tests at first, and then, if you obtain a positive result, confirm it in all cases by one of the two accurate tests. If you find that the urine contains some reducing substance other than sugar, it is advisable to find out, if possible, whether the applicant is taking some drug, such as rhubarb or chloral, which might cause the reaction. But be sure to report your full findings to the company.

(*c*) *Specific Gravity.*—If the specific gravity of the urine is above 1030 or below 1010 (in some companies the limits are 1028 and 1012), you should obtain another specimen of urine and test it again. If the specific gravity was low at the first trial, it is well to test the second specimen for albumin and sugar, for in a urine which is very much diluted, these substances might not react with the usual tests.

If the urine contains albumin or sugar, you should obtain a second specimen in all cases, if that is the only defect in the examination. If the second specimen proves to be normal, it is well to test still a third specimen. In these cases you should report your entire findings. Furthermore, you should state in all cases where there is a history of either albuminuria or glycosuria, that the applicant has been under no treatment or dietetic restrictions during the preceding six months. Sugar can be entirely eliminated from the urine in many pronounced diabetics by a rigid dietary; and the same is true to a less degree of albumin. In fact, there is at the present time a little specialty growing up whose aim is to beat the life-insurance companies by removing the manifest evidences of disease, especially in urinary troubles. We must be on our guard against this species of fraud, and we have to depend for our protection entirely upon the sharpness of the local examiner.

Microscopical examination of the urine is not required in every case. The right to make microscopical examinations is restricted generally to a few selected examiners who are appointed especially for this purpose. Their business is to report exactly what they find under the microscope, and it is not necessary therefore to lay down any rules concerning this part of the urinary examination.

SECTION XIII

YOUR RECOMMENDATION

Most companies require you now to review the blank to see that no answers have been omitted, and then to make a recommendation as to the acceptance of the risk. In many blanks this can be answered simply "yes" or "no," but in others you are expected to state whether the applicant is in your opinion a "good, fair only, or poor risk." Your answer to this question should be based largely upon the applicant's physical condition. If he has some permanent organic trouble, you should reject him. If you consider the trouble to be temporary or functional, you should postpone him. If you feel satisfied as to his physical condition and are sure that he is a good risk, you should approve him. If the company requires you to classify him, you will rate him as good, or fair, according to his physique, his appearance, and general record of vitality.

The matter of family history is one that can be left entirely to the judgment of the home office. So far as the personal history of the applicant is concerned, that should generally be left to the judgment of the officials at the home office. If you feel that a recent illness has left some sequel that is not shown in the physical examination, or if you think that the danger of serious recurrence is great, you should say "No" or "Postpone," stating, under these circumstances, in a foot-note the reasons for your action.

Not infrequently conditions will arise which make it advisable for you to approve the risk on the examination report, although you know that he should be rejected. Under these circumstances, there is no objection to your doing so, provided you notify the home office at once of your real attitude in regard to the case. Examiners are usually furnished with confidential letter blanks which are to be filled out in all such cases; in fact, we advise you to use these blanks whenever you reject or postpone an applicant, for occasionally an agent will suppress an unfavorable report in the hope of getting a more *complaisant* examiner to pass the risk.

In some companies the examiner is not required to make any recommendation and this plan has many advantages. He is expected to set forth fully the facts in the personal and family records and to state the results of his physical examination, and from these data the medical department draws its conclusions and takes its action.

We have now reached the end of our examination-blank. It has doubtless been tedious to you and seemingly unnecessary to elaborate so fully and with such minuteness on each petty detail. We have gone thus fully into all the questions in order to equip you better for the work of examining. You must remember that the medical director at the home office examines only the applications, not the applicants. You are his eyes and ears, and he rightly holds you responsible if there are any faults of omission or commission in the examination. No matter how much you may recommend an applicant, if you have omitted in part or in whole an answer to some of these questions, it is necessary that that omission should be supplied before the medical director can intelligently pass upon the application. We have tried to indicate to you what are the features of each question which the home office deems of consequence, giving you thereby the opportunity to omit trivial and unimportant details, and, at the same time, we have striven to impress upon you the significance of certain matters which you might otherwise think were trivial and unimportant. To many of you all this mass of detail will seem superfluous, but no item mentioned should be disregarded. If you had to look over several hundred applications a day and see the crass stupidity with which perfectly simple matters are handled, you would appreciate the feelings of the medical director at the home office much better.

SECTION XIV

RELATIONS WITH AGENTS

So far, we have discussed the medical examiner's duties in his relation to the company and the applicant. He also has certain obligations due the agent. The agent is a man, who like the rest of us is hustling for his daily bread, and he is the "legs" upon which every company must walk. His commissions, obtained from the policies which he places, represent to him the same that your fees do to you. They constitute his means of living and no one likes to be deprived of any prospective income. The agent has to work hard to get the application signed. It means a good deal to him to have the applicant passed. But yet it is your painful duty oftentimes by your rejection of his risk to take away from him the money which he has already spent in prospect. For that reason you should be as courteous and agreeable to him as you possibly can.

You are paid for each examination, whether accepted or rejected, but the agent is only paid for those cases on which a policy is issued and for which he collects the premium. Quite a percentage of business that is issued is never paid for; the applicant changes his mind, some other agent makes him a more attractive offer, some friends persuade him to take insurance elsewhere. Under these circumstances, the agent, after working weeks or months on a case, gets no reward at all. You see that the prospect is not a pleasing one, and you owe it to him that you do not hamper his efforts in any way. By attending to certain details, you can materially facilitate his work.

First. *Promptness.*—You should be prompt in keeping all the engagements made by an agent as you would with a consultant medical brother, just as quickly as you can attend to them. Complete your report as soon as you can, consistently with the proper examination of the case, and see that your report is thorough, that every question is answered, and answered fully so that there may be no delay from the endeavor to get additional information. Before *you sign* your report it is a wise thing to go over it carefully question by question, and see if there is anything which needs answering or further explaining.

Second. *Courtesy.*—Be polite and pleasant with the agent. Do not get ruffled with him whether he tries to bulldoze you or cajole you. Do not make sharp retorts if he becomes sour or disgruntled because you have been obliged to reject one of his cases. Most of us would be as short-tempered as an agent under these circumstances. Try to put yourself in his place so far as your feelings and manners go. You have to do your duty, but try and make it as agreeable to him as you can.

Third. *Tact.*—You owe it to him to exercise tact and courtesy with the applicant. There are three points in the examination of an applicant where you will need these qualities. The first will occur right at the beginning when you are endeavoring to isolate yourself and the applicant. This can easily be overcome without much difficulty. The second place where tact is needed sometimes is in the physical examination. Sometimes men, and not infrequently women, will object to the removal of enough clothing to permit a satisfactory examination. Here you will have to exercise a good deal of tact and a good deal of patience; but you can always succeed with these qualities. The third place where tact is required is at the time when you obtain the urine. This must be obtained in such a manner as not to offend the applicant, and, at the same time, you must be sure that the urine is passed by the applicant. Here again proper explanations, if courteously presented, will succeed in all cases, though you may have to exercise a good deal of patience.

Fourth. *Sympathy.*—You can often accomplish much with an agent by an exhibition of some fellow-sympathy with him. Not infrequently the company will reject a case which you think should deserve insurance. Under these circumstances you are perfectly justified in writing to the company directly and urging the acceptance of the risk, setting forth your reasons in full; in fact, this course is manifestly proper. At the home office, we pass upon applications, not applicants. Sometimes a case which looks bad on paper may be all right if we could only see it in flesh and blood. *If you* are sure it is a good case, it is just as much your duty to urge the acceptance as it is your duty to reject it if you think it is a bad case. We like examiners with hard backbone, especially if that is accompanied with hard sense. Do not hesitate, therefore, to fight for an applicant if you think your case is good.

Fifth. *Assistance.*—You can often be of much help to an agent without in any way compromising yourself or lowering the dignity of your position. If an agent comes to you and says that he has been soliciting an applicant and asks what you think of the man as a risk there is no objection to your telling him that it is doubtful that the man will pass if you know that to be the case; or of telling him that so far as you know the case is a good one if you really think so. There is no objection to your introducing an agent to a prospective applicant provided always that you do not share in the commissions which he may obtain. You are at liberty to solicit insurance yourself, but you must not be solicitor and examiner in the same case. For that reason, you cannot take any remuneration from an agent for the work which he and you do together. We do not care to have an examiner make a business of soliciting applicants, and if he finds that it pays him more to be a life insurance agent, it is better that he should resign his position as examiner; but there is no objection to his acting as agent only.

SECTION XV

FRAUDS AND FRAUDULENT PRACTICES

THESE are very common in life insurance, and it is necessary for every examiner to be thoroughly posted concerning them and to be constantly on guard. Some of them are originated by the agent and the applicant acting together. In a few cases the agent alone is responsible, and in certain lines of fraudulent practices the applicant is largely accountable. The medical examiner very rarely participates in these practices. No doubt he is often tempted, and it is greatly to his credit that he falls so seldom.

This subject can be divided into the lesser and the greater frauds. The lesser frauds are on the whole the more important because they are more common. They may be grouped under several heads.

First. *Under-Stating Age.*—This is one of the most common and is undoubtedly practised by many applicants. If the discrepancy between the real and the stated age is only a few years, it cannot be detected during an examination, but when the discrepancy amounts to five years or more, an examiner usually notices it. If he feels convinced that the age is understated, he should communicate that fact at once to the company.

Second. *Suppressing and Distorting Facts in the Record.*—This again is fairly common. An applicant is examined by one physician and makes certain statements concerning his previous history and his family record which are sufficient to cause his rejection; he finds out through the agent or the examiner what this action was due to and when he is next examined he either suppresses the facts entirely, or materially modifies them. In other cases the applicant is coached by the agent who has sufficient knowledge of the conditions which are detrimental to life insurance. Furthermore, some applicants, without any coaching, have a lively idea of their own interests and suppress or distort material facts. On account of these habits, we again remind you that *nothing* should be taken for granted in the statements of an applicant. All applicants will put their best foot forward, and it is your business to question them closely if they make any acknowledgment of some previous illness or give some doubtful history either in personal or family record.

Third. In some cases the agent will come to you and ask you to modify some statement which you have made in the examination report. This you must never do, not even to the extent of changing the date of your examination. The agent will advance all sorts of arguments, will even tell you that he has had instructions from headquarters, but in no case is it right for you to make a change in the statements which the applicant has made or in the report which you give concerning his physical condition, unless upon re-examination you can convince yourself that you were wrong in the first place. No man is infallible, and if an agent begs you to give the man another chance on account of some answer you have made, it is well to try and accommodate the agent by seeing the applicant again with reference to this particular point. If you have the proper kind of backbone, no harm can come from it and you can at least please the agent by showing a sympathetic interest in his behalf.

Fourth. Occasionally an agent will try to prevent you from making a proper physical examination. The excuses offered are various, such as, the difficulty of making it in that particular place, the limited time at his command, the limited time that the applicant has, etc. But in no case should you be deterred from a thorough physical examination. If the place is noisy or too public, you should make him come to your office, or else furnish you a suitable place.

Fifth. An agent or applicant may try to prevent you from obtaining the urine. Here again your only recourse is to report the facts to the company if you are unable to get a specimen of whose authenticity you are sure.

Sixth. Occasionally a medical report will be altered after it has left your hands. This is something that you cannot guard against except indirectly. If you have advised the rejection or postponement of the case, you should regularly and immediately send a statement of your action directly to the home office.

In order to prevent this fraud, some companies have the medical examiner's blank sent directly to the home office. The greatest difficulty in this plan is due to the carelessness and lack of thorough work on the part of the medical examiner himself. He sends out so many half-baked reports, and is so slow in replying to requests for information that the delays become intolerable.

Seventh. You must be very careful in the examination of women. Women for many years were not considered acceptable risks and even now some companies refuse to take them. Their mortality was much higher than the company had any right to expect. Women have a keen desire for the protection of the home, and most of them have very poor ideas about business. These factors, coupled with their natural timidity and modesty, make the matter of examination very difficult. There is no doubt that a great deal of petty fraud has been exercised in their insurance affairs.

The greater frauds practised in life insurance are not so numerous. As a rule, each one of these frauds requires several people to commit it successfully. When several people are involved in a crime, it is very apt to leak out sooner or later. Doubtless a large percentage of these criminals have been apprehended and convicted. Among these greater frauds we find:

First. The substitution of one person for another. This has been done a good many times, but is not an easy matter to accomplish successfully. In order to forestall this, there is a question in most blanks which calls for the description of some mark of identification. In order to make sure that the answer to this question is correct, the medical examiner in all cases should inspect the scar or mark which is offered for this purpose, and he should record it accurately and fairly minutely. Everybody has some superficial anomaly which can be used for this purpose, and the question should never be overlooked. Some companies require a certain amount of personal description, such as, color of hair and eyes. This fraud in order to be of any value to the participants must come to a crisis within a few months or a year or two at least. For that reason a proper mark of identification is of *great* value in detecting it.

Second. *Substitution of Urine.*—This is merely a modification of the variety we have just been discussing. It is easier to accomplish, but a careful examiner will never permit himself to be fooled by it.

Third. Actual bribery of medical examiners and collusion with them are very rare. Still there are several medical men who have spent their time within the penitentiary on account of this.

Fourth. The murder of a person already insured whose policy is made out in favor of the murderer has been committed a number of times. Some of the cases are very interesting as specimens of crime.

Fifth. Suicide is a means which is not infrequently used to defraud life-insurance companies. In order to prevent it nearly every insurance company has a clause which provides that suicide within a certain time after the issuance of the policy shall not make the policy a claim against the company. At first this was the simple provision against suicide, but our juries and judges became so lenient that they regarded all suicides as mentally unsound, and nowadays the clause is worded so as to provide against suicide whether sane or insane. In some parts of the country they have found a means of getting around even this by calling the suicide an accident.

Sixth. Mysterious disappearance is the termination which some men select instead of suicide. As a rule, a mysterious disappearance is so arranged as to give the probability of suicide. For that reason, many of them occur on the water where the idea of drowning will naturally arise. The scheme has been worked successfully without doubt, but in a good many instances the perpetrators have been caught.

CHEMICAL EXAMINATION OF THE URINE

APPENDIX A

CHEMICAL EXAMINATION OF THE URINE

THE chemical examination of the urine for life insurance requires neither elaborate apparatus nor great skill, but it does demand painstaking care. More mistakes are made by being a little hasty or careless than in any other way. It may seem finical to insist upon waiting half an hour for a reaction to develop, especially when an anxious or perhaps intolerant agent is hanging around trying to hurry you to a decision, but in this, as in all other matters pertaining to an examination for life insurance, thoroughness is essential, and you must not allow yourself to be hurried if there is the slightest doubt. The simple instructions given in this section must be followed closely and carefully.

The only apparatus needed is:

1. Two test-tubes, five or six inches long, and five eighths or six eighths of an inch in diameter.

2. Urinometer, preferably Squibbs.
3. Alcohol lamp or Bunsen burner.
4. Litmus paper, red and blue, preferably Squibbs. (This must be kept in bottles, tightly corked, so that volatile acids and alkalies will not affect it.)
5. Glass pipettes. These are not absolutely necessary, but are very handy.
6. Glass graduate or beaker. Not necessary, but very comfortable.
7. Filter-paper and glass funnel.

The only reagents required are:

1. Nitric acid, chemically pure.
2. Acetic acid (the strong official acid).
3. A solution for testing sugar.

All the apparatus should be kept scrupulously clean, using nitric acid for that purpose, if necessary. Dirty tubes and beakers are an abomination and a frequent cause of mistakes. If the pipettes have rubber nipples, care should be taken that no acid comes in contact with them. The solution used in testing for sugar must be carefully made of chemically pure substances. All the tests should be made in good light and in daylight. They cannot be made properly at night, and we must insist upon this. It is a good plan to have a black background of cloth which can be put up against a well-lighted window. In that way you can get *both* good illumination and a good background.

Let us now consider the details of the urinalysis.

Clearness

The urine should be practically clear. If turbid and acid, fill a test-tube half-full and gently warm. If the turbidity disappears when the temperature reaches blood-heat, it is due to urates. If turbid and alkaline, fill a test-tube half-full and add a few drops of acetic acid and shake. If this clears up the turbidity, it is due to the earthy phosphates.

If the turbidity persists after both these tests, it may be due to pus and mucus, or bacteria. If the former, the company should be informed of it. If they see fit, they can then send for a specimen, or order you to make a microscopical examination. If the latter, you should obtain a fresh specimen and test it promptly, before extra-corporeal decomposition can occur.

Specific Gravity

The only precaution to take in determining this is that the urinometer must not be in contact with the walls of its tube, but must float clear in the urine. Squibbs's apparatus is especially well designed to overcome this difficulty.

Most companies have limits for the specific gravity, generally 1010 and 1030, but in some cases 1012 and 1028. If it falls outside of this range, you are required to obtain another specimen which is within the limits. If the specific gravity was low originally, the new specimen should be tested for albumin and sugar, for in the first specimen these might have been so diluted as not to give a reaction.

Reaction

This is tested for by the litmus paper. Acids turn blue litmus paper red, while alkalies turn red litmus paper blue. Occasionally a urine will be amphoteric, in which case it turns red blue and blue red. This condition is of no significance.

Albumin

Unless the urine is perfectly clear, it must be made so. This can usually be accomplished by filtering through ordinary filter-paper, doubled, and repeating several times if necessary. If it still remains turbid, this is probably due to bacteria and a fresh specimen should be obtained. No inert powder, such as powdered talc or bismuth subnitrate, should be used to facilitate filtration, for while such a procedure materially aids in clearing turbidity, it is undoubtedly capable of removing considerable *albumin* from the urine also. You must be sure that the urine is absolutely clear before proceeding with the tests for albumin, for a very slight turbidity will completely nullify them.

(*a*) *The Heat Test.*—Fill a clean test-tube two thirds full of clear urine. If not acid, it should be made so by the addition of one or two drops of acetic acid. Then boil the upper half of the urine for a minute at least, holding the tube by its lower end and taking care that it does not become sooty. Then hold the tube against a dark background by a well-lighted window.

If there is no sign of turbidity in the upper boiled part as compared with the lower cold part, there is no albumin present in that urine.

If there is any turbidity in the upper boiled part, add two or three drops of nitric acid and shake very gently. If the turbidity entirely and promptly clears up, it was due to the earthy phosphates and we can still say that the urine is free from albumin.

If any turbidity, no matter how slight, remains after the addition of nitric acid, it indicates the presence of albumin or of nucleo-proteid, probably the former. To differentiate between these, we must resort to Heller's test.

(*b*) *Heller's Test.*—Put in a clean test-tube half an inch of nitric acid. Float an inch of clear urine with great care and gentleness on top of this acid. This can easily be done by a pipette, or the use of the funnel and filter-paper. Be very careful not to shake the tube or else the two liquids will mix. Then hold the tube against a dark background by a well-lighted window.

In most urines a brownish discoloration will appear at the junction of the two liquids. This signifies nothing and is simply due to the action of the nitric acid on the coloring matter of the urine.

If a sharply defined white ring, no matter how thin it is, appears at the junction of the two liquids, it signifies the presence of albumin. The only drawback to this test is the fact that it takes time to develop it, and you cannot be sure of the absence of albumin unless you let the test wait for a good half hour. If the amount of albumin is more than a trace, it will show the reaction in a few minutes or even seconds, if the quantity is considerable. But if only a trace is present, it will frequently take half an hour to develop the reaction. For that reason you must wait that time before giving a negative answer. Remember that the white ring must be at the line of contact of the two liquids in order to indicate the presence of albumin.

If the person has been taking any oleoresin, *such as* cubebs, copaiba, etc., this will cause a white ring also at the junction of the liquids, but this can be easily differentiated from albumin by means of the heat test. If you discover this reaction, you should find out from the applicant why he is taking such medicine and report the facts to the company.

A diffused ring or cloudiness, beginning above the line of contact and running up in the urine, indicates urates or nucleo-proteid, but not albumin. This reaction should never confuse you, for the albumin ring is at the line ot contact and is sharply defined.

It is necessary to report the presence of nucleo-proteid, if you are sure of it, so that the medical department may act with a full knowledge of all the facts before it. A delicate test for it is to float an inch of clear urine on to a half inch of acetic acid in a clean test-tube. A white ring or cloudiness indicates either nucleo-proteid or urates. In order to differentiate them, gently put the test tube in hot water. If the cloudiness disappears as the urine becomes warm, it is due to urates, but if it persists it is due to nucleo-proteid.

These are all the tests that you need for albumin. If you get a positive reaction with both, you can be sure that albumin is present. If you get no reaction with both, you can be sure that albumin is absent. Many other tests have been devised, and doubtless some of then are useful in the hands of their specialists. One great objection to them is the fact that nearly all react with nucleo-proteid as well as albumin. This used to be called mucin, but true mucin is practically never found in the urine, and the reactions formerly ascribed to it are undoubtedly due to nucleo-proteid. The clinical significance of this is not well understood, but in most cases it indicates only a secretion from the walls of the bladder or urethra and is of no consequence. In some cases, however, it seems to indicate deeper-seated and more serious trouble.

Sugar

If much albumin is present in the urine, you should get rid of it before testing for sugar, as it confuses or masks the reactions. In order to do this, add two or three drops of acetic acid to a test tube full of urine, boil thoroughly, and then filter until the urine is clear again.

The tests for sugar may be divided into negative and positive. The negative tests are all reduction-tests in which the power of sugar to abstract oxygen from compounds in the presence of an alkali is utilized. This faculty, however, is present in other substances which occur in the urine and a reduction-test, therefore, is only of negative value. When using *it, the* absence of a reaction indicates the absence of sugar, but the presence of a reaction simply shows that some reducing agent is present, and while this is much more apt to be sugar than anything else, it may be some other substance. The best reduction-tests are those in which a salt of copper or bismuth is used. We will discuss them separately.

(*a*) *Fehling's Solution.*—This is best prepared in two solutions, as follows:

1.—34.64 grammes of pure crystallized copper sulphate is dissolved in 500 cubic centimetres of distilled water by the aid of gentle heat.

2.—180 grammes of crystallized potassium sodium tartrate (Rochelle salt) together with 70 grammes of caustic soda or 100 grammes of caustic potash is dissolved in 500 cubic centimetres of warm distilled water.

These two solutions should be kept separately in well-stoppered bottles in the dark. When the reagent is wanted, equal quantities should be taken from each bottle and well mixed. The resulting liquid is dark blue.

One drachm of this should be put in a test-tube and gently boiled. Then urine should be added, a few drops at a time, and the boiling continued. If sugar be present, the solution assumes an opaque yellow color, and soon a dense yellowish-red sediment falls to the bottom. Should no change occur, urine must be slowly added until its volume equals but does not exceed that of the reagent. After the urine is added, boiling should not continue more than half a minute, for the reaction is prompt. Simple discoloration of the reagent does not indicate sugar, nor does the formation of a grayish cloud, which is due to the precipitation of earthy phosphates.

(*b*) *Haines's Reagent.*—The great objection to Fehling's reagent is its liability to spontaneous decomposition. In order to overcome this difficulty, Prof. Walter S. Haines has devised the following ingenious formula. Take pure copper sulphate, thirty grains; distilled water one half ounce; make a perfect solution and add pure glycerine one half ounce; mix thoroughly and add five ounces of liquor potassæ. In testing with this solution put about one drachm in a test-tube and gently boil. Then add the suspected urine, drop by drop, up to eight drops—not more—while continuing to boil. The same reaction occurs as with Fehling's solution. If much sugar is present, it will show with the first drop or two, but in no case should more than eight drops of urine be added. Haines's solution will keep indefinitely and is a very good reagent.

(*c*) *Nylander's Solution.*—This is the best solution in which bismuth is used as a reagent. *It is a* modification of Boettger's test and consists of two grammes of bismuth subnitrate and four of Rochelle salt (potassium sodium tartrate) dissolved by the aid of gentle heat in 100 c.c. of a ten-per-cent. solution of sodium hydrate. It has the advantage over Fehling's solution of not spoiling, and is not so readily reduced, being unaffected by chloral, pyrocatechin, or glycosuric acid. It is, however, less delicate than Fehling's, detecting only one tenth per cent. of glucose and that imperfectly, but that is good enough for all clinical work. The most delicate method of applying the test is to fill a test-tube about half-full of urine and then add about one third of the reagent, mixing them well together. Boil the upper layers and if sugar is present, a dark-brown or black precipitate of metallic bismuth and bismuth suboxide is produced. Boiling should be maintained for two minutes if necessary. The formation of a light-gray cloud is not significant as it is simply due to earthy phosphates.

Any one of these three reagents is all that you need for a negative test. Remember that the testimony which they give is mainly of a negative value. If you get a reaction with any of them, the strong probabilities are that it is due to sugar, but not necessarily so. It will be necessary, however, for you to assume that it is due to sugar until you are absolutely sure that it is not. Any case which gives a reaction with one of them should be reported to the company with a full statement of facts. Remember, furthermore, that if you get a reaction with one reduction-test, it is useless to corroborate it with another of the same kind, for this will add nothing to your knowledge of the case.

There is no need to describe the other reduction-tests which have been devised, for none of them are accurate. This statement applies to indigo-carmine, picric acid, safranine, thymol, and alpha-naphthol.

There are but two tests for sugar which give reliable positive results — fermentation and phenylhydrazine. The application of either requires some technical skill and practice, but you should cultivate one of them until you feel that you are master of it. Such knowledge will be of great help to you in your practice and may save you from mortification in your life-insurance work.

(*d*) *Fermentation.*—In this test the sugar present in the urine is fermented by the aid of ordinary yeast and the carbon dioxide given off is collected and measured. A gramme of glucose when fermented will form about 250 c.c. of carbon dioxide at ordinary temperature and pressure. To collect and measure this gas requires special technique. One way is to fill a large test-tube with urine and add a small quantity of yeast. Mix thoroughly, and then with the thumb over the mouth of the tube, invert it and stand it in a bowl of mercury. As fermentation proceeds, the gas collects in the upper part of the test-tube, driving out the urine through the mercury. The simplest and best way of applying the fermentation test is by means of Einhorn's saccharometer.

Although urine absorbs about its own volume of carbon dioxide this test is sufficiently delicate for all clinical purposes, as it will show the presence of one tenth per cent. of glucose. Whichever method is adopted, certain precaution must be taken.

1. The temperature should preferably be between 80° and 90° F.

2. While fermentation is going on, the temperature must never rise above 115° F., for yeast is killed at that point.

3. The temperature should not be constantly below 60°, for fermentation proceeds very slowly or not at all below this point.

4. In every case a control test should be made. This should be done with a normal urine, known not to contain sugar. This control is of great value, for as all yeast contains a little glucose, the presence of a bubble of gas at the top of each tube shows that the yeast is fermenting properly, and at the same time yo

can see whether the suspected urine is forming more gas.

5. In doubtful cases at least twenty-four hours should elapse before declaring that the test gives no reaction.

6. The urine must be free from antiseptics or preservatives.

(*e*) The other positive method for detecting sugar is by the phenylhydrazine test. Put in an ordinary five or six inch test-tube about half an inch of phenylhydrazine hydrochlorate. This is a brownish-white scaly substance having a strong odor of aniline. On top of this put another half-inch of chemically pure sodium acetate, and fill the tube half-full of urine. Shake until the sodium acetate is dissolved and then gently heat. When the whole mass is hot, boil for a half-minute or minute. The result of these manipulations is the formation of phenylglucosazone, which crystallizes and can be found in the precipitate when cold. It forms acicular crystals of a golden-yellow color which can easily be recognized under the microscope. They have a marked tendency to collect in radiating clusters, or in sprays that resemble a feather or a twig of spruce, or in sheaves like those of wheat. Similar compounds are formed with lactose, galactose, and maltose, but none of these except lactose is found in the urine, and that only in the urine of nursing women during acute suppression of lactation. Consequently its liability to interfere is very slight. Tyrosin when present in the urine forms somewhat similar clusters, but the crystals are colorless. It can safely be asserted that the crystals of phenylglucosazone are characteristic and a positive indication of the presence of glucose. The crystals can be found within an hour or less after the urine has cooled.

The only drawback to the phenylhydrazine test is the fact that once in a great while a urine is found which undoubtedly contains glucose but in which crystals of phenylglucosazone cannot be formed. The reason for this is unknown at present, and until we find out what the substance is which prevents the reaction, we will not be able to overcome the difficulty. For that reason a negative reaction with it cannot be accepted as proof of the absence of sugar. Hence the fermentation test is distinctly more reliable, but it takes a day while the other takes an hour.

Résumé of the steps in a chemical urinalysis:

1. Note whether clear or turbid. If the latter, find out to what it is due.

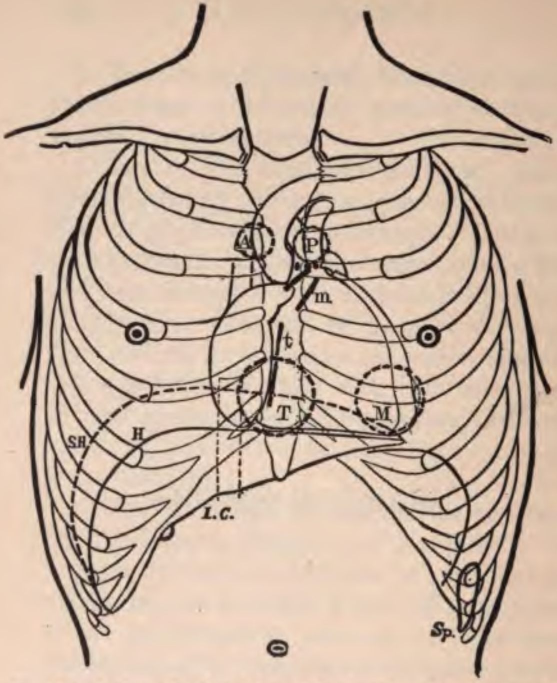
2. Take the specific gravity. If above 1030 or below 1010—1028 and 1012 in some companies—arrange about getting another specimen.

3. Test the reaction with both blue and red litmus paper to determine whether it is acid, alkaline, or amphoteric.

4. Test for albumin by the heat-test. If this gives absolutely no reaction, you can safely say that the urine contains no albumin. If it gives any reaction at all, test the urine then by Heller's test, letting it wait at least half an hour if necessary. The use of the heat-test is advised at first, for it requires only a few minutes, and a negative reaction with it is conclusive. In your report to the company state distinctly what you find with each test, if they give diferent reactions.

5. Test for sugar by one of the reduction tests, Fehling's, Haines's, or Nylander's. If you get no reaction, you can be sure that the urine contains no sugar of clinical importance. If you get a reaction with one of these tests, corroborate it by fermentation or phenylhydrazine. A positive reaction with either is conclusive. If, however, you get a negative reaction with fermentation or phenylhydrazine and a positive reaction with a reduction-test, you should state the full findings in your report to the company.

HEART MURMURS



The three horizontally placed dots at the junction of the sternum and 3d left costal cartilage indicate the position of the pulmonary semilunar valve. The aortic valve forms an angle with the latter. The tricuspid valve is represented by the vertical line marked t; the mitral valve, by the oblique line marked m lying across the third left interspace.

IC—The inferior vena cava. H—The anterior hepatic level.
SH—The posterior hepatic level. Sp—The spleen.

M is placed in the circle which indicates where the sound of closure of the mitral valve is loudest. Mitral murmurs also have their maximum intensity here.

T is in the circle which indicates the tricuspid area, where the sound of the tricuspid valve and the tricuspid murmurs are best heard.

P indicates the pulmonic area, where the sound of the pulmonic valve and the pulmonic murmurs are best heard.

A indicates the aortic area, where the sound of the aortic valve is best heard. Usually the murmur of aortic stenosis is also loudest here, but the murmur of aortic regurgitation is frequently best heard immediately *over* the aortic valve or lower down the sternum.

APPENDIX B

HEART MURMURS

Mitral Regurgitation

Frequency.—The commonest valvular lesion.

Murmur.
- *Rhythm.*—Systolic, replacing or following the first sound.
- *Maximum Intensity.*—Apex of the heart, or just within it.
- *Area of Diffusion.*—Transmitted in all directions, but especially towards the axilla, and also heard behind near the lower end of the left scapula.

Character of Heart Sounds.—The first sound may be more or less replaced by the murmur. The pulmonic second sound is almost invariably accentuated when compensation is established.

Character of Cardiac Enlargement.—The chief enlargement occurs in the right ventricle.

Character of Pulse —There is usually nothing abnormal about the pulse while compensation lasts. When that begins to fail, it becomes weak and irregular, but without characteristic features.

Differential Diagnosis.—(*a*) From tricuspid regurgitation q. v.

(*b*) From aortic stenosis q. v.

(*c*) From hemic murmurs. These usually have their point of maximum intensity in the pulmonic area and never cause any accentuation of the pulmonic second sound. It must not be forgotten that anæmia may produce temporarily a true mitral leakage by causing a dilatation of the mitral orifice.

(*d*) From cardio-respiratory murmurs q. v.

Mitral Stenosis

Frequency.—Not very common. Three quarters of the cases occur in women.

Murmur.
- *Rhythm.* — Presystolic, ending abruptly with the first sound. Frequently it has a marked rumbling quality, which causes the well-known presystolic purring thrill over the heart.
- *Maximum Intensity.*—Apex or just above it.
- *Area of Diffusion.*—Very limited.

Character of Heart Sounds.—The first sound is not altered. The pulmonic second sound is usually accentuated when compensation is established.

Character of Cardiac Enlargement.— The chief enlargement is in the left auricle and the right ventricle.

Character of the Pulse.—Frequently irregular even when compensation is perfect.

Differential Diagnosis. — From tricuspid stenosis. This extremely rare condition is practically never differentiated from mitral stenosis during life and the diagnosis is regularly made at the autopsy.

Aortic Regurgitation

Frequency.—Fairly common, especially after middle life.

Murmur.

- *Rhythm.*—Diastolic, replacing or following the second sound.
- *Maximum Intensity.*—Quite variable. Usually on the left side of the sternum about the level of the fourth left costal cartilage. Sometimes in the aortic area, the second right interspace, or rarely at the apex.
- *Area of Diffusion.*—All over the precordia. Sometimes transmitted along the aorta and into the back, or even into the subclavians and carotids.

Character of Heart Sounds.—The first sound is decidedly accentuated at the apex. The pulmonic second sound is not accentuated.

Character of Cardiac Enlargement.—Chiefly in the left ventricle.

Character of the Pulse.—Regular while compensation lasts. In many cases it has the characteristic "water-hammer" quality. Besides this, a capillary pulsation may often be demonstrated. The best way to elicit this is to rub a narrow streak on the forehead with some hard substance, when the systolic flushing of the hyperæmic area can be noted.

Differential Diagnosis.—From pulmonary regurgitation q. v.

Aortic Stenosis

Frequency.—Infrequent, unless combined with aortic regurgitation. This latter murmur is frequently so short when combined with stenosis, that it is often overlooked, and only the lesion of stenosis noted.

Murmur.

Rhythm.—Systolic, replacing or following the first sound.

Maximum Intensity.—Usually in the aortic area, the second right intercostal space near the sternum. Sometimes lower down along either right or left margin of sternum.

Area of Diffusion.—Widely transmitted. Usually over the entire sternum, often to the apex of the heart and sometimes over the whole chest. Frequently there is a systolic thrill over the upper part of the sternum.

Character of Heart Sounds.—The aortic first sound is obliterated, and the aortic second sound is absent or feeble.

Character of Cardiac Enlargement.—Chiefly in the left ventricle.

Character of Pulse.—Pulse infrequent and small, with a slow ascent and descent. This is modified when associated with aortic regurgitation.

Differential Diagnosis.—(*a*) From roughness of the aortic valves or of the aorta. These conditions occur late in life and are usually associated with arterio-sclerosis. This causes accentuation of the aortic second sound which is a capital differential point. Be careful to note this condition in your report, even though you think it does not indicate actual obstruction.

(*b*) From aneurism of the ascending arch, or of the innominate. This may give rise to every sign of aortic stenosis, except the characteristic pulse and the diminution of the aortic sound. Besides these differential points an increased area of dullness can usually be made out over the site of the aneurism.

(*c*) From hemic murmurs. These have a much smaller area of diffusion and are not accompanied by the characteristic pulse, or any enlargement of the heart.

(*d*) From pulmonary stenosis q. v.

Pulmonary Regurgitation

Frequency.—Excessively rare after birth.

Murmur.
- *Rhythm.*—Diastolic, with and following the second sound.
- *Maximum Intensity.*—In the pulmonic area, the second left intercostal space near the sternum.
- *Area of Diffusion.*—Very limited.

Character of Heart Sounds.—Pulmonic second sound is sharply accentuated.

Character of Cardiac Enlargement.—Chiefly the right ventricle.

Character of Pulse.—Irregular but not altered otherwise.

Differential Diagnosis.—From aortic regurgitation. Its location and limited area of diffusion, the absence of a "water-hammer" pulse and of capillary pulsation easily serve to differentiate it from aortic regurgitation.

Pulmonary Stenosis

Frequency.—Very rare.

Murmur.
- *Rhythm.*—Systolic with or following first sound.
- *Maximum Intensity.*—Second left intercostal space. A thrill is usually felt here too.
- *Area of Diffusion.*—Very limited.

Character of Heart Sounds.—Pulmonic second sound is weak.

Character of Cardiac Enlargement.—Chiefly the right ventricle.

Character of Pulse.—Irregular but not altered otherwise.

Differential Diagnosis.—(*a*) From hemic murmurs. These are not accompanied by a thrill, are very soft, and are not associated with cyanosis and enlargement of the right ventricle. Remember that a systolic murmur in the pulmonic area is much more apt to be of hemic origin than organic. Do not fail to report it in either case.

(*b*) From aortic stenosis. The point of maximum intensity in this is usually on the right side of the sternum, and it is widely transmitted. It also gives rise to a characteristic pulse, and the aortic second sound is obliterated.

(*c*) From aneurism—by the pressure signs of the tumor and by the pulsation in the sac.

(*d*) From roughening of the aortic arch. The murmur of this may be transmitted into the carotids and there is no enlargement of the right ventricle.

Tricuspid Regurgitation

Frequency.—Very rare, except in the late stages of mitral disease.

Murmur.
- *Rhythm.*—Systolic, with and following the first sound.
- *Maximum Intensity.* —Usually near the junction of the fifth or sixth left costal cartilage with the sternum, though it may be either to the right or left of this.
- *Area of Diffusion.*—Usually limited to the lower part of the precordial area.

Character of Heart Sounds.—Not altered particularly. In pure tricuspid regurgitation the pulmonic second sound is not accentuated.

Character of Cardiac Enlargement.—Chiefly in the right ventricle and auricle.

Character of Pulse.—In many cases there is a marked systolic pulsation in the external jugular veins and in the liver. The arterial pulse is apt to be small.

Differential Diagnosis. —From mitral regurgitation. Not easy as the two conditions are often associated. If the two murmurs have each a distinct area and vary in pitch or quality, they may be separated. Venous pulsation in the jugulars and liver proves the existence of tricuspid regurgitation.

Hemic Murmurs

Frequency.—Common, especially in anæmia.

Murmur.
- *Rhythm.*—Systolic almost always.
- *Maximum Intensity.*—In the pulmonic area, the second left intercostal space. Occasionally in the aortic or mitral area.
- *Area of Diffusion.*—Often quite limited, but sometimes over the precordium and rarely into the vessels of the neck.

Character of Heart Sounds.—Not altered, except that the first sound at the apex may be lacking in muscular quality.

Character of Cardiac Enlargement.—None.

Character of Pulse.—Apt to be rather small and compressible.

Differential Diagnosis.—(*a*) From pulmonic stenosis q. v.

(*b*) From aortic stenosis q. v.

(*c*) From mitral regurgitation q. v.

The hemic murmurs are included among the functional, but it is of great importance to recognize them and to state them fully in your report to the company. Although functional, they indicate a decided impairment of the general health and the mortality among applicants which show them is high.

Cardio-Respiratory Murmurs

These are produced by the motion of th heart against the overlapping lung and are o no pathological significance. They are no uncommon, however, and it is necessary t differentiate them from organic murmurs. Th murmur with which they are most frequentl confounded is that of mitral regurgitation, a they are usually heard in the neighborhood o the apex and are always systolic in rhythm.

The differential points are:

1. They are greatly affected by respiratio and are heard almost exclusively during inspiration, especially towards the end of it while true cardiac murmurs are almost alway fainter at this point.

2. They disappear entirely in forced expiration, especially if the chest is fixed in thi position for a few seconds.

3. Pressure on the outside frequently modifies their intensity or quality.

4. Their quality is soft and usually resembles the ordinary respiratory murmur.

Be absolutely sure of your ground befor you say that a murmur is cardio-respiratory While it is unjust to the applicant to call suc a murmur mitral regurgitation or aortic stenosis, it is infinitely worse to label either of thes *organic* murmurs cardio-respiratory.

Hypertrophy and Dilatation

These conditions occur from many causes in the systemic and pulmonary circulations, as well as in the heart itself. In all cases of valvular heart disease, it is important to determine the degree and character of the cardiac enlargement with a view to the prognosis of the case.

1. Hypertrophy involving the left ventricle especially. The apex is lower than normal, in the sixth, seventh, or even eighth interspace. It is usually a little farther to the left than normal, but not much. The apex impulse is powerful and frequently moves the chest wall over a considerable area. The first sound at the apex is prolonged, low-pitched, but of greater loudness than usual and of a booming quality. The second sound is accentuated, both at the apex and in the aortic area. Visible pulsation may be present in the larger arteries.

2. Hypertrophy involving the right ventricle especially. The apex is displaced somewhat downward, but especially to the left, sometimes reaching the mid-axilla. The precordial impulse is often somewhat increased, but not to the same extent as when the left ventricle is hypertrophied. Occasionally an increased area of dullness can be detected to the right of the

sternum as well. The pulmonic second sound is almost always accentuated.

3. Dilatation of the heart. This regularly follows hypertrophy due to valvular lesions if life is not cut off by some inter-current disease. The shape of the precordium depends upon which side of the heart was mainly hypertrophied. The apex is usually blunt and its impulse is feeble and irregular. The first sound is usually short, sharp, and lacking in muscular quality, and the second sound is feeble. If the left ventricle is much dilated, the mitral valve may become incompetent, while if the right side is chiefly affected, the tricuspid may permit regurgitation. Besides these cardiac symptoms, we regularly get the evidence of venous stasis, either in the lungs, or in the general circulation.

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